CHAPTER 6. SUMMARY OF FINDINGS

6.1 Project Overview

The California Department of Transportation (Caltrans) proposes to establish a new alignment for State Route 58, which would provide a continuous route along State Route 58 from Cottonwood Road on existing State Route 58, east of State Route 99 (post mile R55.6), to Interstate 5 (I-5) (post mile T31.7). Improvements to State Route 99 (post miles 21.2 to 26.2) and Westside Parkway would also be made to accommodate the connection with State Route 58.

The project is located at the southern end of the San Joaquin Valley in the city of Bakersfield in Kern County, California (see Figure 1-1). The study site is bound on the east by Cottonwood Road, on the west by I-5, on the north by Gilmore Avenue, and on the south by Wilson Road. Caltrans is the lead agency for the project pursuant to the California Environmental Quality Act and the National Environmental Policy Act.

The proposed continuous route is known as the Centennial Corridor.

The purpose of the Centennial Corridor project is to provide route continuity and associated traffic congestion relief along State Route 58 within metropolitan Bakersfield and Kern County from State Route 58 east (from Cottonwood Road) to Interstate 5.

The American Association of State Highway and Transportation Officials' *A Policy on Geometric Design of Highways and Streets* (2004) defines route continuity as a roadway throughout the length of a designated route. The goal of route continuity is to ease the driving task by reducing the need to change lanes and search for directional signing. Route continuity is evaluated in terms of consistent levels of service by providing an appropriate number of lanes.

State Route 58 is a critical link in the state transportation network that is used by interstate travelers, commuters, and large numbers of trucks. Under existing conditions, State Route 58 does not meet the capacity needs of the area, and this is expected to get worse as the population grows. State Route 58 lacks continuity in central Bakersfield, which results in severe traffic congestion and reduced levels of service on adjoining highways and local streets. This route is offset by about one mile at State Route 43 (Enos Lane) and by approximately two miles at State Route 99. The merging of two major state routes (58 and 99) into one alignment between the eastern and western legs of State Route 58 degrades the traffic level of service on this segment of freeway. In addition, State Route 99's close spacing between its two interchanges with State Route 58 (east and west), in addition to an interchange at California Avenue, results in vehicles aggressively changing lanes, which adds to congestion.

State Route 58 is a high volume, east–west, interregional route in Bakersfield and is critical to the economic vitality of the region and the state. It provides significant goods and freight movement connections between Interstate 5 and State Route 99 in the Central Valley. State Route 58 also links to other important goods movement corridors nationwide such as State Route 14, Interstate 15, Interstate 40 and U.S. 395.

As noted above, there are two locations within the project study area where the route is offset: approximately one mile at State Route 43 and approximately two miles at State Route 99. Because State Route 99 is a major state highway in the Central Valley and is the only north–south freeway in Bakersfield, it carries large volumes of traffic. Regional and interregional traffic using State Route 58 contribute to the already considerable volumes of traffic on State Route 99 along the segment shared by these two highways.

The population of metropolitan Bakersfield is rapidly growing. In the area east of State Route 99, three highways (State Route 204, State Route 178 and State Route 58) provide a well-developed freeway system to handle large volumes of local traffic movement. There are no freeways in the metropolitan area west of State Route 99 to support growth. The stop- and signal-controlled local highways and streets west of State Route 99 add to commute times and provide lower levels of service. The proposed project would provide the additional capacity to accommodate this growth.

6.2 Existing Conditions

State Route 58 generally travels in the east–west direction for approximately 240 miles across California and is currently one of the most significant routes going through Bakersfield. West of Bakersfield, the route is called the Blue Star Memorial Highway and runs for roughly 100 miles until terminating at Highway 101, near Santa Margarita, California. East of Bakersfield, the route is called the Barstow–Bakersfield Highway and runs for about 140 miles until terminating at Interstate 15 near Barstow, California.

Within metropolitan Bakersfield, State Route 58 is made up of four principal sections, as illustrated on Figure 6-1 and described below.

Interstate 5 to Allen Road

Starting at Interstate 5, State Route 58 is currently a conventional highway, locally identified as the Rosedale Highway. Between Interstate 5 and Allen Road, the corridor is a two-lane facility surrounded by agricultural land with some recently developed residential areas.

The alignment of State Route 58 is offset by approximately one mile where the roadway jogs, and is co-located with State Route 43. The intersections of State Route 43 with State Route 58 north and State Route 58 south are stop sign controlled. Speed limits are posted at 55 miles per hour (mph).

Allen Road to State Route 99

This section of State Route 58/Rosedale Highway is principally a business route with two lanes in each direction and outside turn pocket lanes at street intersections. The highway typically includes a slightly raised, non-landscaped median varying up to about 20 feet wide. No posted speed limits are evident, except in 25 mph school zones, but traffic generally travels at about 45 to 55 mph. Although there are very few residential areas directly along this highway, this section services the communities of Rosedale, Greenacres and Fruitvale, which surround the highway.

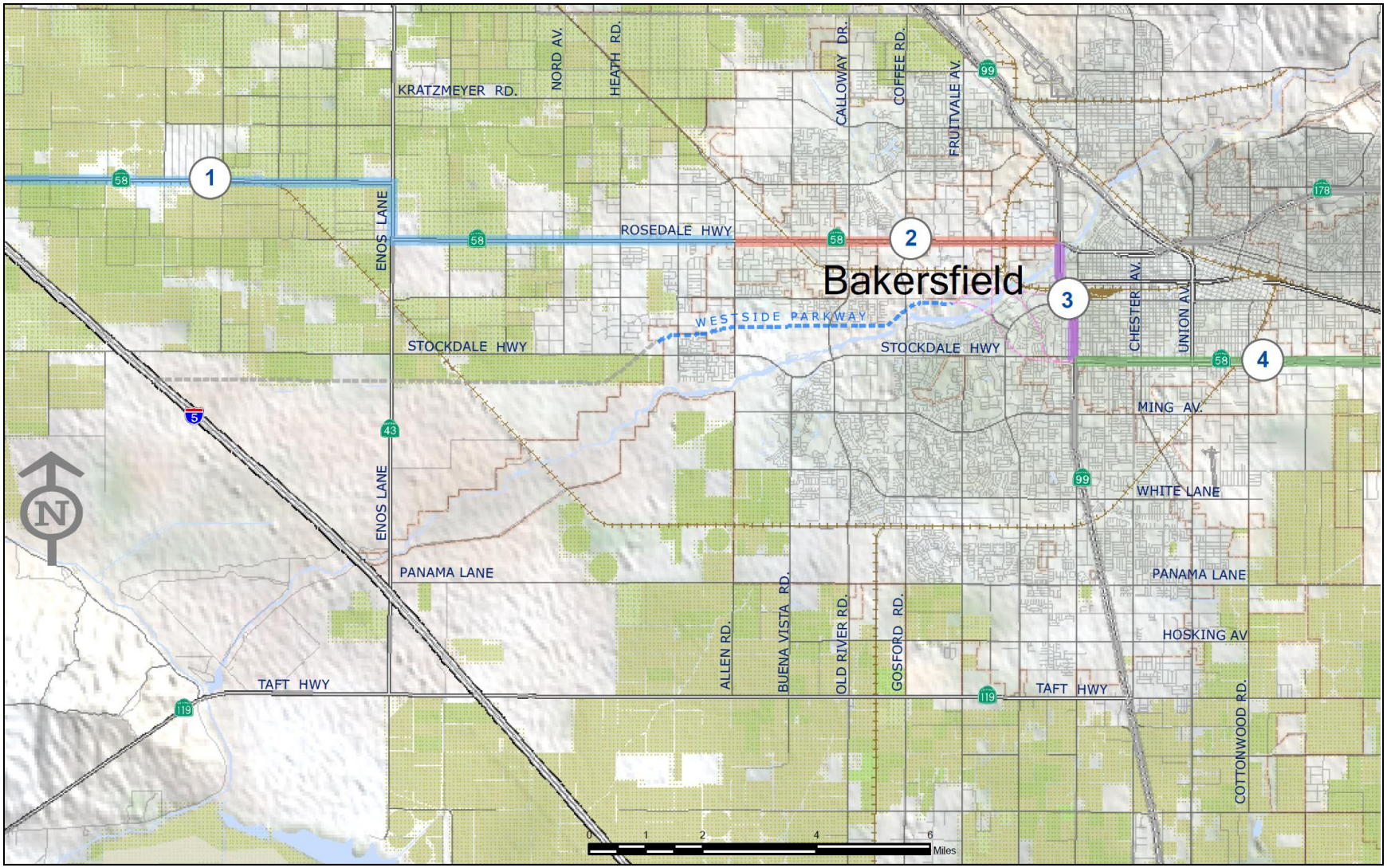


Figure 6-1: Principal Sections of State Route 58 in the Centennial Corridor Vicinity

The first two miles of Rosedale Highway east of Allen Road is a mix of undeveloped land, old homes and businesses, and a trailer park. Just east of Allen Road is a 25 mph zone for Rosedale Middle School; and just past this school is Rosedale Park. Continuing east, the highway elevates over the BNSF Railway and then returns to its previous ground level. Past the railroad and as the route approaches Calloway Drive, there are some small businesses and shopping areas. For about one mile on the north side of the highway, between Calloway Drive and Coffee Road, exists a large restaurant and shopping center made up of newer "big box" retailers called the Northwest Promenade. The south side has a few smaller businesses, auto shops and gas stations, but the majority of the land is open for overhead power line towers and petroleum storage reservoirs. Just east of Coffee Road, the highway crosses over both the Friant–Kern Canal and then the Calloway Canal. The posted speed limit is reduced to 25 mph for the Vista West High School located to the south. Farther east, the highway crosses over Calloway Canal again as the canal turns back north near Fruitvale Avenue. Just east of this, the highway crosses over Emery Ditch and still farther east, is another railroad crossing. For the two and a half miles between Coffee Road and the interchange with State Route 99, the highway services a few businesses and restaurants, but is mostly undeveloped or adjoined by light industrial land uses with some auto shops, storage facilities and warehouses. East of the railroad crossing, around Gibson Street, the speed limit is 40 mph. As the highway passes under State Route 99, it opens up to three lanes and will have additional single or double turn lanes as needed. The area surrounding this interchange is made up of numerous large restaurant and hotel chains. It also services the Bakersfield Heart Hospital located northeast of the interchange.

State Route 58 West to State Route 58 East (State Route 99)

State Route 99 is an extensive north–south route in the middle of California servicing more than 400 miles of the state. It extends north past Sacramento and terminates at its junction with Interstate 5, about 20 miles south of Bakersfield. At the north end of Bakersfield, it provides freeway access to the Meadows Field Kern County Airport. Farther south, it has a large interchange with State Route 204 and Airport Drive.

Within the study area, both east and west travel directions of State Route 58 have ramps that directly access southbound lanes of State Route 99. The two state routes combine and continue in the north–south direction for two miles until an interchange immediately south of Brundage Lane where both routes diverge. This portion of the freeway consists of four lanes with shoulders in each direction, separated by a concrete barrier with a posted speed limit of 65 mph (55 mph for trucks or haulers). Exit numbers descend in the south direction. State Route 99 Exit 26 will connect travelers to 24th Street/State Route 178. Exit 25 connects to the Civic Center and California Avenue. Exit 24 accesses Stockdale Highway or Brundage Lane and the section where State Route 58 diverges east from State Route 99. One mile farther south is the final exit in the study area, Exit 23 for Ming Avenue.

State Route 99 to Cottonwood Road

East of Bakersfield, State Route 58 is also called the Barstow–Bakersfield Highway and continues east for about 140 miles until its junction with Interstate 15 near Barstow, California. Traveling south on State Route 99, the access ramp for State Route 58 east elevates high as an overpass above Stockdale Highway, State Route 99, State Route 58 and Wible Road, before descending back down to access the eastbound lanes of State Route 58. Traveling west on State

Route 58, an exit ramp connects to the State Route 99 northbound lanes as an underpass below Brundage Lane and Oak Street. State Route 58 east is a divided highway separated by a metal barrier and a wide median. It consists of two lanes with shoulders in each direction and has a posted speed limit of 65 mph (55 mph for trucks or haulers). There are several residential areas offset from the highway on both sides up to the Union Avenue/State Route 204 exit. Exit numbers ascend in the east direction. Exit 111 provides access to Chester Avenue and downtown Bakersfield. About one-quarter mile west of Exit 114 for Mt. Vernon Avenue, the highway widens to three lanes in each direction and continues with this cross section as the road leaves the city of Bakersfield.

Figure 6-2 illustrates the location of congestion along the freeway portions of the route. State Route 58 east of State Route 99 is relatively uncongested under existing conditions except for the eastbound segment approaching Union Avenue. The shared section of State Route 99 and State Route 58 between State Route 58 east and Rosedale Highway is more congested, with slower speeds and light congestion experienced at interchange on-ramp merge areas and off-ramp diverge sections.

6.3 Future No-Build Conditions

Traffic volumes are expected to increase in the future as Kern County continues to attract new residents and Bakersfield continues its role as a crossroads of north–south and east–west interstate and intrastate personal travel and trade corridor movements. Table 6-1 and Figure 6-3 chart the history of population growth past, present and future. As has been the trend for the past 60 years, residents and jobs have been attracted to Kern County in increasing numbers. All population forecasts support a continuation of population increases once the current economic slowdown passes.

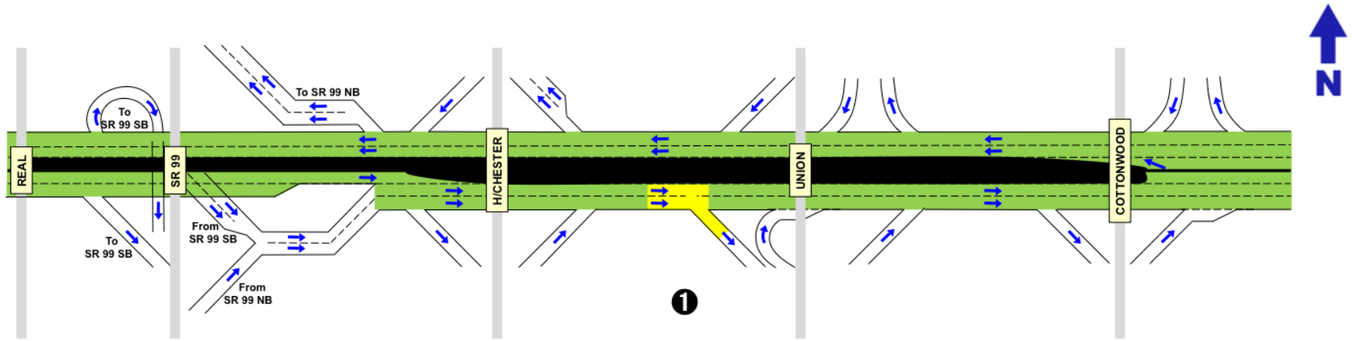
More residents, more jobs, and more trade will result in higher volumes of automobiles, trucks and trains passing through central Bakersfield. Figure 6-4 illustrates the pattern of traffic volumes using metropolitan Bakersfield's arterial streets and state highways in 2006 and 2038. State highways such as State Route 58, State Route 99 and State Route 178 are expected to experience major increases in traffic flows.

As a result of increased traffic volumes, the level of congestion along State Route 58 and the shared portion of State Route 99 (between State Route 58 east and Rosedale Highway) is expected to worsen. Figure 6-5 illustrates the location of bottlenecks, traffic queues and slower speeds anticipated to occur by year 2038, assuming no project to connect State Route 58 east with the Westside Parkway.

Congestion will be particularly heavy along State Route 99 in the vicinity of State Route 58, where speeds will slow below 40 mph due to heavy on- and off-ramp volumes and weaving conflicts. The extent of congestion is illustrated on the graphic by segments colored as red and yellow. Traffic will also slow along westbound State Route 58 as the traffic queue along southbound State Route 99 spills back to the on-ramp from westbound State Route 58.

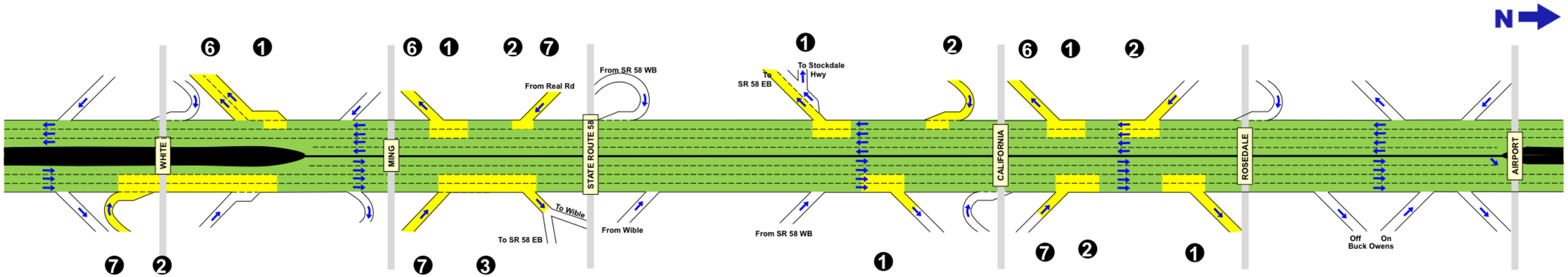
STATE ROUTE 58

Segment 1



CONGESTION CAUSES		DESCRIPTION
1	Heavy off-ramp volume	Vehicles crowd right lanes of freeway trying to exit
2	Heavy on-ramp volume	Vehicles entering freeway crowd right lanes of freeway
3	On-ramp to off-ramp weave conflicts	Heavy volumes of traffic entering freeway conflict with heavy volumes of traffic exiting freeway
4	Spillback from bottleneck on mainline	Traffic congestion ahead causes approaching traffic to slow speed and compress space between vehicles
5	Bottleneck	Traffic volumes on mainline (combined on-ramp, weaving, off-ramp, through movements) exceed capacity, causing traffic to slow and compress space between vehicles
6	Off-ramp/arterial street bottleneck	Congestion on arterial street limits throughput of freeway off-ramp
7	On-ramp spillback	Congestion on freeway limits throughput of on-ramp to freeway

STATE ROUTE 99



LOS A, B, C, D
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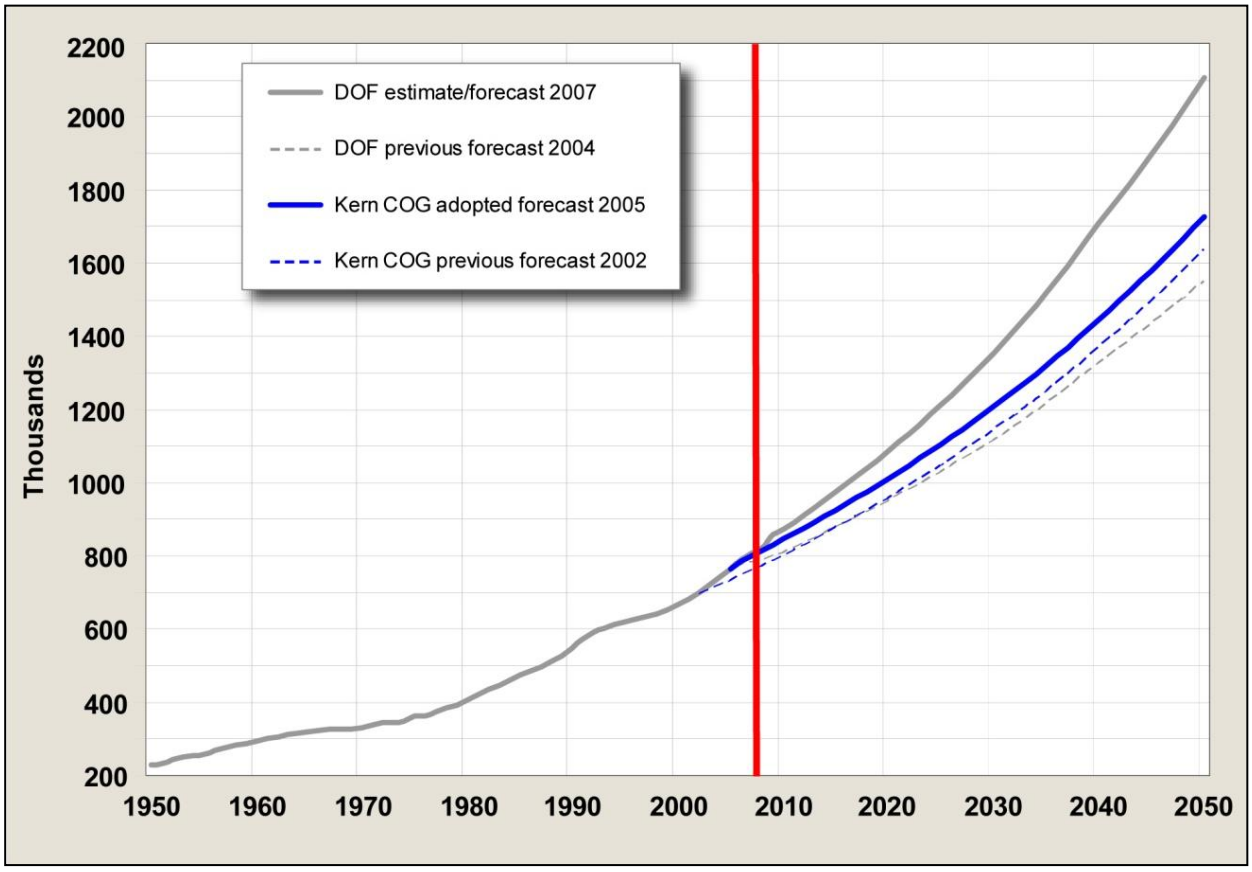
Figure 6-2: Existing Traffic Operational Conditions on State Route 58 and State Route 99

Table 6-1. Comparison of Kern County Population Forecasts

	CA DEPARTMENT OF FINANCE[1]		CALIFORNIA ECONOMIC FORECASTS REPORT[2]					KERN COG[3]
YEAR	2004	2007	2005	2005	2007	2008	2010	2005
1995			630,300					
2000	664,694	665,519	665,367	665,373				
2005	732,800		767,764	770,424	768,928			765,600
2010	808,808	871,728	886,417	895,263	885,176	853,486	848,730	845,600
2015			1,009,368	1,036,709	1,005,806	950,991	938,042	924,533
2020	950,112	1,086,113	1,132,743	1,185,769	1,128,324	1,057,804	1,040,449	1,010,800
2025			1,255,384	1,331,953	1,241,859	1,165,153	1,148,731	1,105,094
2030	1,114,878	1,352,627		1,474,471	1,347,635	1,272,081	1,256,152	1,208,200
2035							1,367,600	1,321,000
2040	1,325,648	1,707,239						1,444,100
2050	1,549,594	2,106,024						1,726,200

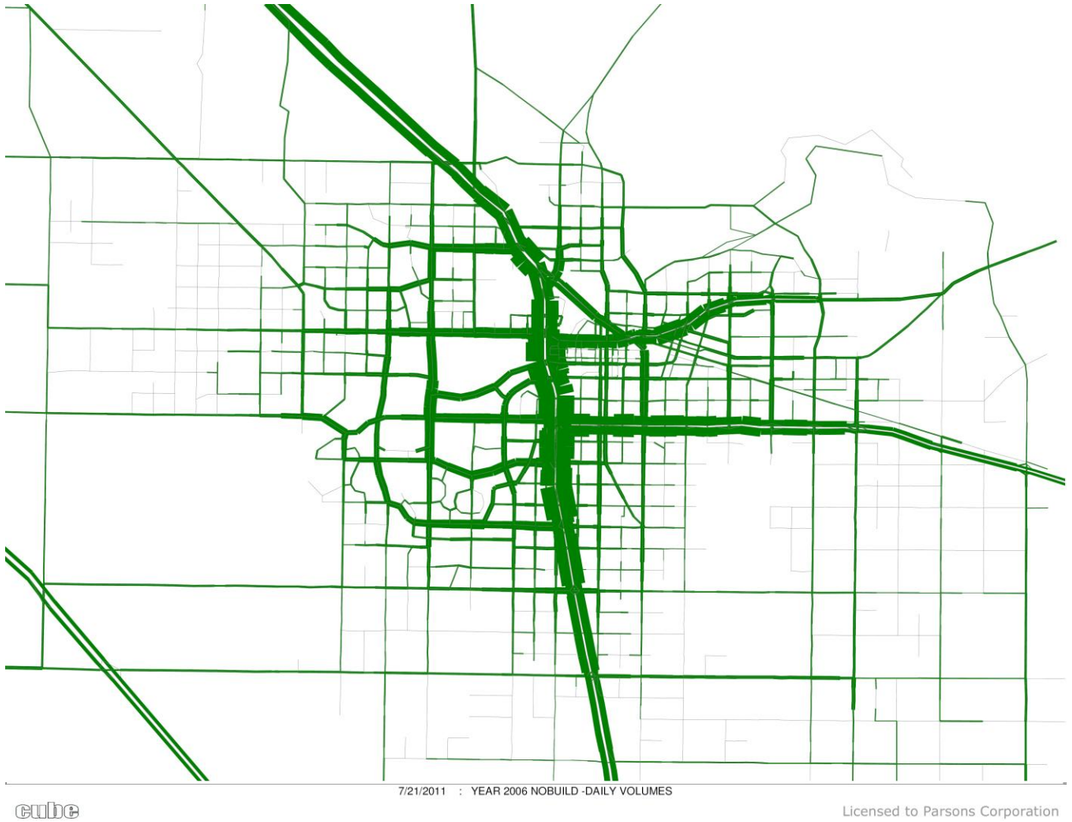
Sources:
[1]California Department of Finance, Demographic Research Unit, May 2004 and July 2007
[2]California Department of Transportation, county-level economic forecast reports from 2005, 2006, 2007, 2008 and 2010 prepared by Dr. Mark Schniepp, California Economic Forecasts, Inc.
[3]Kern Council of Governments, Kern County Travel Demand Model Population Forecast, updated 2005.



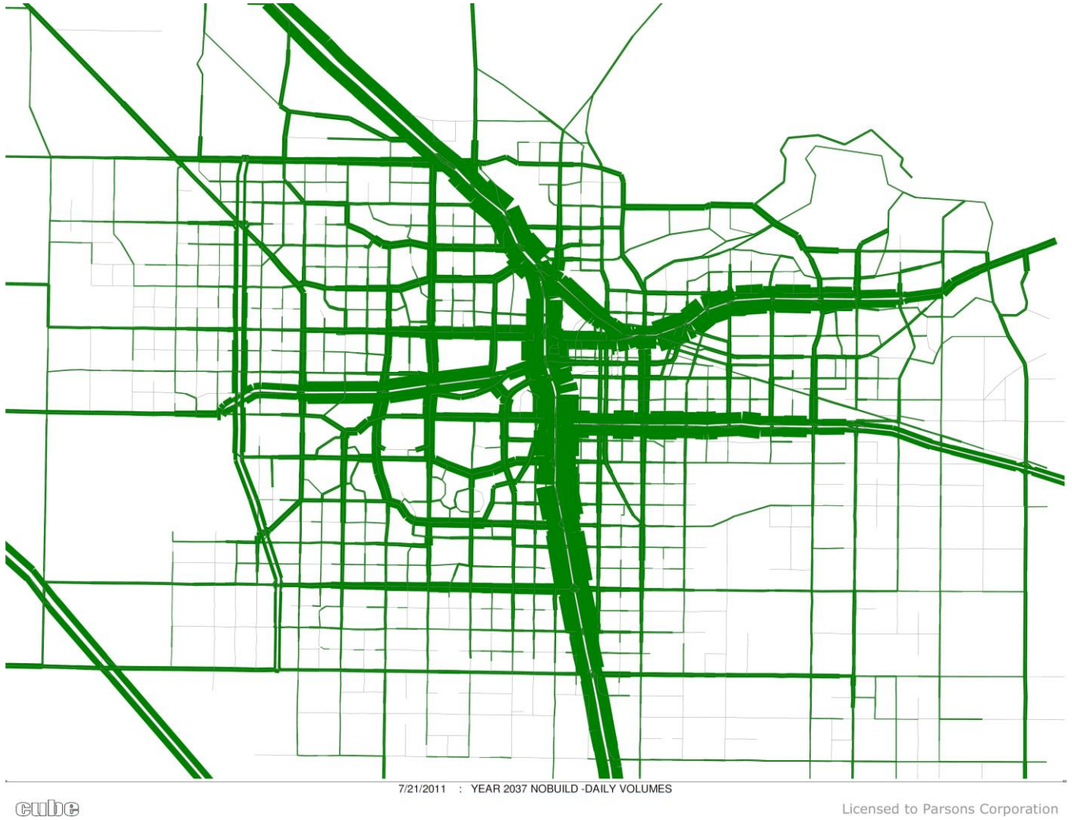
Source: Kern Council of Governments *Final Regional Growth Forecast Report*, October 2009

Figure 6-3: Comparison of Kern County Population Forecasts

2006 Daily Traffic Volumes



2038 No-Build Alternative Daily Traffic Volumes

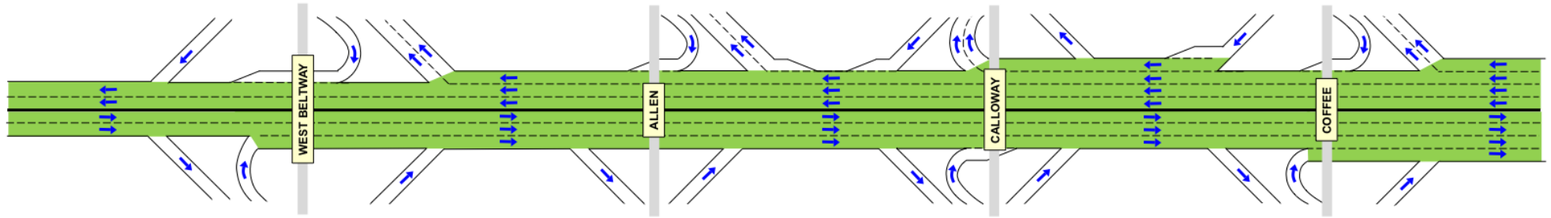


Source: Parsons

Figure 6-4: Difference between Year 2006 and Year 2038 Daily Traffic Volumes

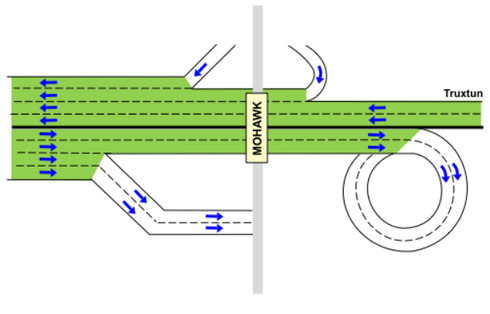
STATE ROUTE 58

Segment 2—Westside Parkway

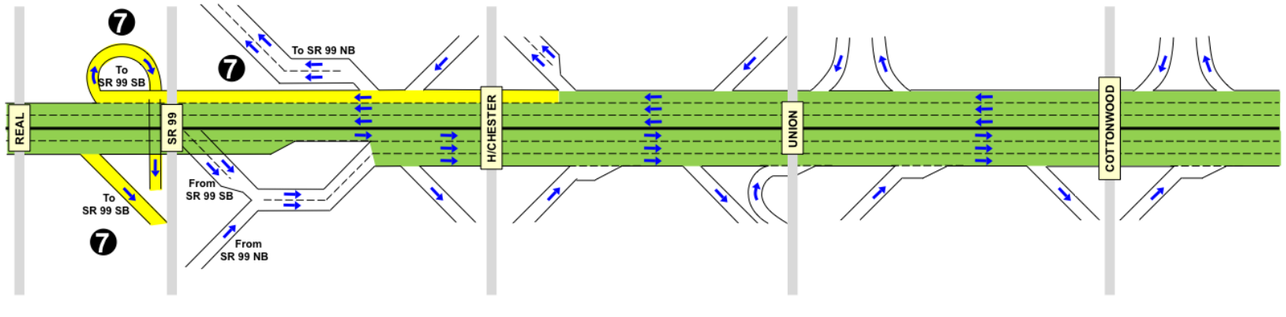


CONGESTION CAUSES		DESCRIPTION
❶	Heavy off-ramp volume	Vehicles crowd right lanes of freeway trying to exit
❷	Heavy on-ramp volume	Vehicles entering freeway crowd right lanes of freeway
❸	On-ramp to off-ramp weave conflicts	Heavy volumes of traffic entering freeway conflict with heavy volumes of traffic exiting freeway
❹	Spillback from bottleneck on mainline	Traffic congestion ahead causes approaching traffic to slow speed and compress space between vehicles
❺	Bottleneck	Traffic volumes on mainline (combined on-ramp, weaving, off-ramp, through movements) exceed capacity, causing traffic to slow and compress space between vehicles
❻	Off-ramp/arterial street bottleneck	Congestion on arterial street limits throughput of freeway off-ramp
❼	On-ramp spillback	Congestion on freeway limits throughput of on-ramp to freeway

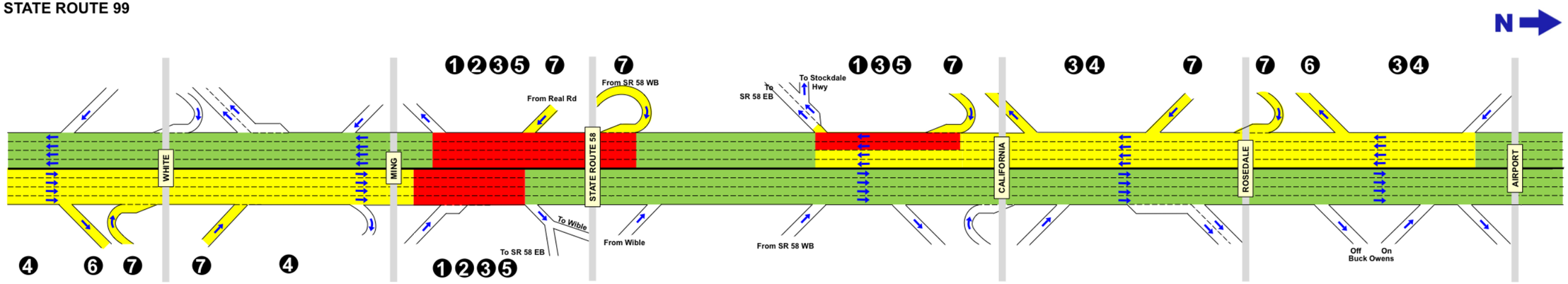
Segment 1—Westside Parkway



Segment 1—State Route 58 (East)



STATE ROUTE 99



LOS A, B, C, D
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Figure 6-5: No-Build Year 2038 Forecast Traffic Operational Conditions on State Route 58 and State Route 99

This expected traffic congestion will impact both Kern County residents and interregional truck flows. Figure 6-6 illustrates the pattern of truck movements using interstate routes within Kern County (Interstate 5, State Route 99, and State Route 58/Interstate 40). Heavy truck volumes in Kern County are forecast to increase by 87 percent between the years 2000 and 2030 according to the *San Joaquin Valley Goods Movement Study*.

6.4 Proposed Project Alternatives

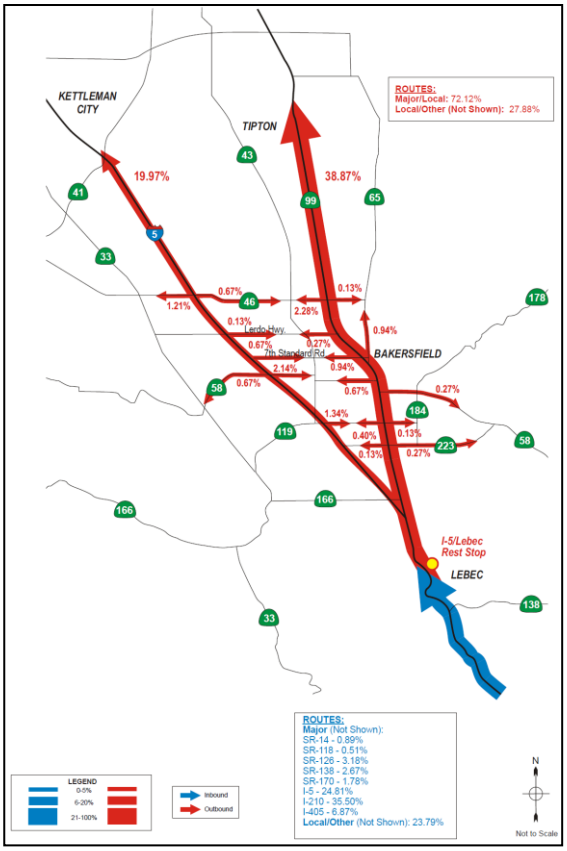
To address the anticipated increase in traffic volumes and resulting congestion, a project has been proposed to connect the segment of State Route 58 east of State Route 99 with the Westside Parkway and the western end of Stockdale Highway, and to adopt this alignment between Interstate 5 and State Route 99 as State Route 58. This project would provide continuity for State Route 58 in Kern County. In addition to providing route continuity and associated traffic congestion relief, this project would:

- Provide interregional and regional connectivity for east–west traffic traveling within metropolitan Bakersfield and Kern County
- Promote economic growth and international/interregional trade by improving linkages between existing segments of the interstate system
- Reduce commercial and regional commute time trough a major freight corridor
- Improve local east–west circulation and reduce congestion to accommodate existing and planned land uses in accordance with adopted growth projections
- Improve operations and reduce congestion on the shared portion of State Route 58 and State Route 99.

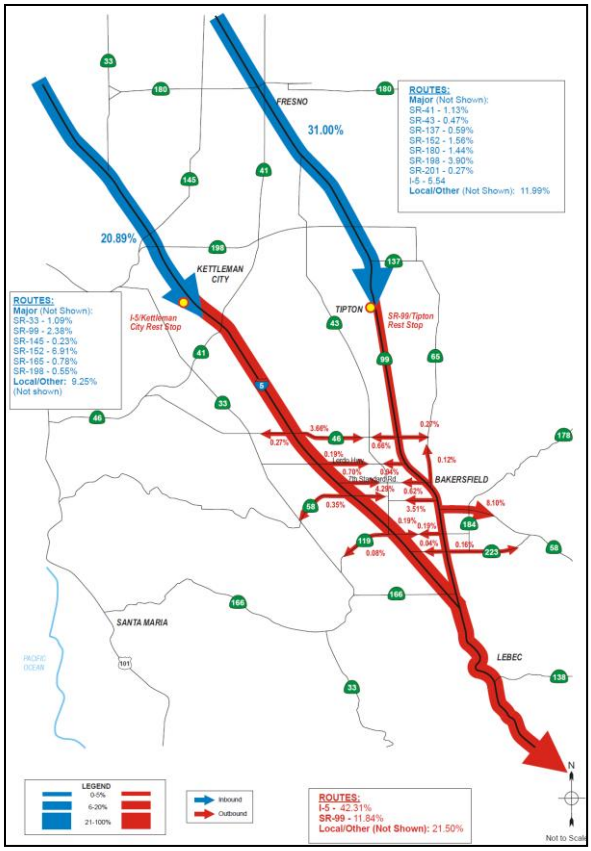
The project alternatives include three build alternatives and a no-build alternative. In addition, this traffic study report evaluates a transportation systems management alternative referenced as alternative M. These alternatives are described below.

No-build Alternative: The no-build alternative would not construct any improvements. The Westside Parkway would be constructed as a local facility, but would not connect to State Route 58, State Route 99, or Interstate 5. Rosedale Highway, the west leg of State Route 58 between State Route 99 and Interstate 5, would be widened from four lanes to six lanes between State Route 99 (Gibson Road) and Allen Road, and from two lanes to four lanes between Allen Road and Enos Lane (State Route 43).

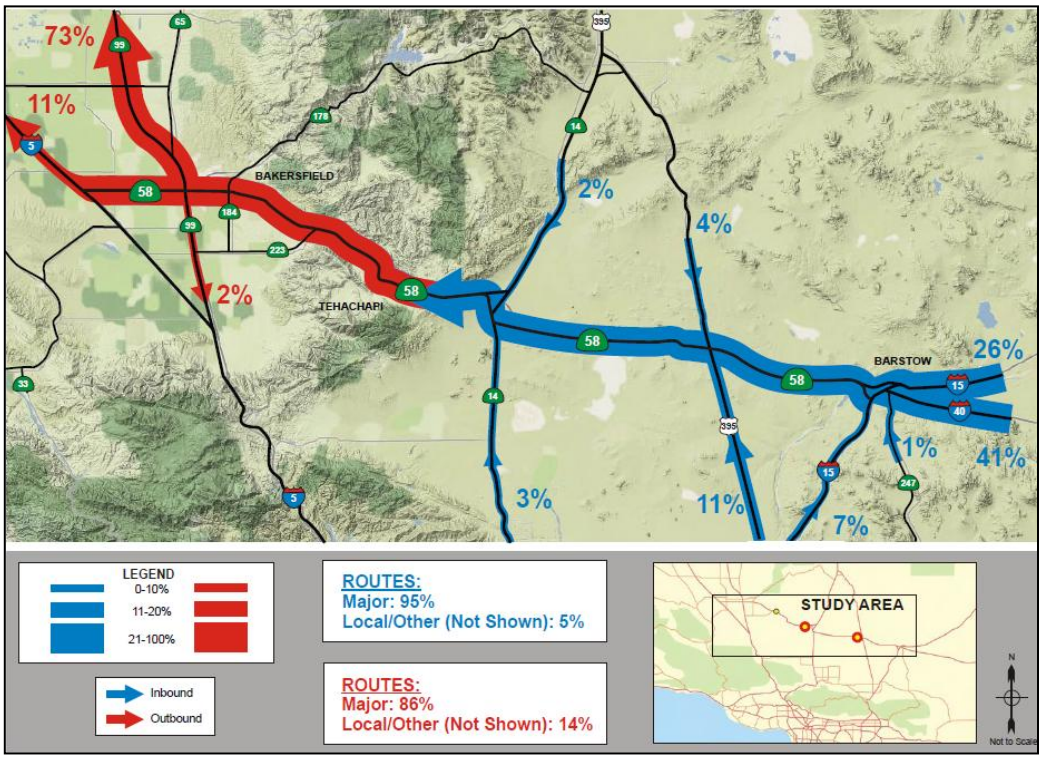
Alternative M: Alternative M, the transportation system management alternative, proposes local arterial improvements to increase the person-carrying capacity. Low-cost improvements include traffic signal optimization, intersection widening and bus service and stop improvements along all of the east–west arterial streets from Hageman Road to Ming Avenue. The same improvements are also assumed for the no-build and all build alternatives, and were therefore not specifically evaluated by this traffic study. Higher cost improvements include constructing grade separations along Rosedale Highway at four major north–south arterial streets and reducing the number of intervening signalized intersections between Allen Road and State Route 99. Detailed traffic operational analysis of the alternative indicates that Rosedale Highway would also need to



Northbound Route Choice (Lebec Rest Stop)



Southbound Route Choice (Kettleman City/Tipton Rest Stop)



Westbound Route Pattern on State Route 58 Corridor

Sources: I-5/SR-99 Origin and Destination Study, SR-58 Origin and Destination Truck Study, KOA Corporation

Figure 6-6: Interstate and Interregional Truck Flow Patterns in Kern County

be widened to eight lanes between Fruitvale Avenue and State Route 99, a distance of 1.8 miles, to accommodate forecast traffic volumes. This alternative assumes there is no new direct connection between the approved Westside Parkway and existing State Route 58/State Route 99 interchange.

Alternative A: Alternative A proposes to connect the east end of the Westside Parkway to State Route 58 by a six-lane facility on the west side of the State Route 58/State Route 99 interchange. This alternative would run parallel to and south of Stockdale Highway for approximately one mile before turning north and connecting to the Westside Parkway between Mohawk Street and Coffee Road. There would also be linkage to the Mohawk Street interchange (to and from the west) providing additional connectivity with downtown Bakersfield.

Alternative B: Alternative B proposes to connect the east end of the Westside Parkway to State Route 58 by means of a six-lane facility on the west side of the State Route 58/State Route 99 interchange. The alignment would travel in a westerly direction for approximately one-half mile on the south side of Stockdale Highway, at which point it would turn to the northwest and join the Westside Parkway just east of the Mohawk Street interchange.

Alternative C: Alternative C proposes to connect the existing State Route 58 to the Westside Parkway by means of a six-lane facility that runs parallel to the existing State Route 99. Auxiliary lanes and ramp modifications on State Route 99 would be required to accommodate weaving movements associated with the new connections.

The proposed continuous alignment for State Route 58 has been divided into three distinct segments and the combination of these three segments comprises the Centennial Corridor project. Segment 1 is the eastern segment that would connect the Westside Parkway (Segment 2) to the existing State Route 58 east freeway. Segment 2 is comprised of what is locally known as the Westside Parkway and extends from Heath Road to Truxtun Avenue. Segment 3 is the western segment that extends from Interstate 5 to Heath Road.

The project's segments are numbered from east to west as shown on Figure 6-7.

Segment 1 extends from the easterly terminus of Segment 2 near Truxtun Avenue to the existing State Route 58 east freeway in the vicinity of Cottonwood Road. It is the only segment where construction alternatives A, B and C are being considered. These three build alternatives plus a transportation systems management/transit alternative (alternative M) and a no-build alternative are being considered, as indicated above.

Segment 2 encompasses a local freeway facility known as the Westside Parkway. As part of the Centennial Corridor project, it is anticipated that the Westside Parkway would be successfully adopted as State Route 58 (under build alternatives A, B, or C).

Westside Parkway is a local, access controlled, multilane freeway that extends from its western terminus near the intersection of Stockdale Highway near Heath Road to its eastern terminus near Mohawk Street, Truxtun Avenue and the Kern River.

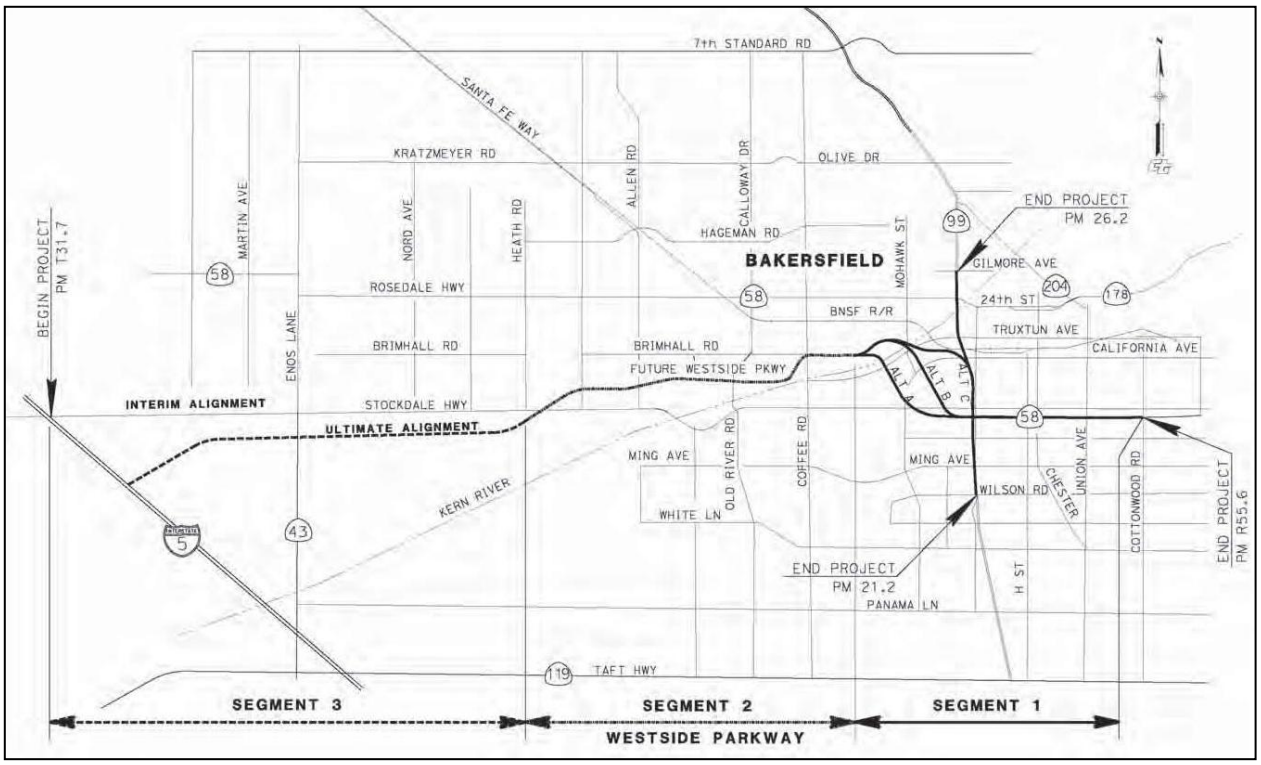


Figure 6-7: Segments for the Centennial Corridor

Segment 3 extends from Interstate 5, approximately two miles south of the Stockdale Highway/ Interstate 5 interchange, to the intersection of Heath Road and Stockdale Highway. The Centennial Corridor project proposes an interim connection to Interstate 5 via Stockdale Highway from the end of Segment 2 near Heath Road under build alternatives A, B, or C. Under alternative M, the connection to Interstate 5 would remain on existing State Route 58, known locally as Rosedale Highway.

This traffic operations analysis is focused on Segment 1, as the limits of construction primarily occur within this segment along with the majority of potential traffic related impacts. The traffic operations analysis addresses Segment 2 to determine if the freeway connector project (Segment 1) will impact the design requirements of the Westside Parkway. The analysis of Segment 3 traffic operations is limited to the interim connection to Interstate 5 via Stockdale Highway under build alternatives A, B, or C.

6.5 Qualitative Traffic Performance of the Project Alternatives

The purpose of this traffic study report is to examine the performance of the build alternatives from a traffic perspective and compare this performance to the no-build alternative.

As stated above, the no-build alternative would not construct any improvements. It would not provide interregional or regional connectivity for east–west traffic traveling within metropolitan Bakersfield and Kern County. It would not provide continuity for State Route 58 in Kern County. It would not promote economic growth and international/interregional trade by improving linkages between existing segments of the interstate system. The no-build alternative

would not reduce commercial and regional commute time through a major freight corridor; nor would it improve local east–west circulation. It would also not improve operations or reduce congestion on the shared portion of State Route 58 and State Route 99 between State Route 58 east and Rosedale Highway.

Six qualitative criteria have been defined to measure the effectiveness of the three build alternatives and the transportation system management/transit alternative for addressing the purpose of the Centennial Corridor project. These criteria are listed below along with Parsons' subjective assessment of the alternative's performance.

1. Provide continuity for State Route 58 in Kern County.

   State Route 58 is offset by approximately one mile at Enos Lane (State Route 43) and by approximately two miles at State Route 99. The improvements proposed for the transportation systems management do not address route continuity objectives, which are the fundamental purpose of the project. Build alternatives A, B and C would provide for a continuous route from Interstate 5 to points east of Kern County via Stockdale Highway, Westside Parkway, the Centennial Corridor and State Route 58 east. This assumes that Westside Parkway and a portion of Stockdale Highway west of Heath Road will be successfully adopted as State Route 58 once the proposed project is constructed.

   The transportation systems management does not meet or address this criterion, which is the purpose of the project. Build alternatives A, B and C fully meet this criterion.

2. Provide traffic congestion relief and interregional and regional connectivity for east–west traffic traveling within metropolitan Bakersfield and Kern County.

   Upgrading Rosedale Highway to a super-arterial, the backbone of the transportation systems alternative, allows the facility to attract and accommodate 11,000 to 34,000 additional vehicles per day between Allen Road and State Route 99, with 24,000 additional vehicles using the upgraded route immediately west of State Route 99. Just east of Enos Lane (State Route 43), the transportation system management alternative increases the use of State Route 58 east by 1,500 vehicles per day compared to the no-build alternative.

   Build alternatives A, B and C would attract between 113,700 to 121,400 vehicles per day in the section west of State Route 99. At Allen Road, use of the Westside Parkway would increase to 81,000 vehicles per day, compared to 66,000 vehicles per day using the Westside Parkway (west of Allen Road) under the no-build alternative. Use of State Route 58 east of State Route 99 would increase by 5,625 vehicles per day under alternative A to 14,485 vehicles per day under alternative C.

   The transportation systems management/transit alternative provides some traffic congestion relief and improves local connectivity to State Route 99, thereby partially meeting this criterion. Build alternatives A, B and C provide substantial traffic congestion relief and interregional and regionally connectivity for east–west traffic, thereby fully meeting this criterion.

3. Promote economic growth and international and interregional trade by improving linkages between existing segments of the interstate system.

   The transportation systems management alternative improves existing State Route 58 west by upgrading approximately six miles of the alignment to a super-arterial facility, from Allen Road to State Route 99. This improvement does not address or further the objective of connecting Interstate 5 to Interstate 15 and Interstate 40 (in Barstow) via a continuous State Route 58 freeway facility.

   Build alternatives A, B and C would construct a freeway between the eastern end of the Westside Parkway and the western end of the State Route 58 east freeway, thereby furthering the objective of connecting Interstate 5 with Interstate 15 via a continuous State Route 58 freeway.

   The transportation systems management alternative does not meet or address this criterion.

4. Reduce commercial and regional commute time through a major freight corridor.

   The transportation systems management alternative reduces travel time along Rosedale Highway by reducing traffic signal delays at major cross streets and reducing the number of signalized intersections between Allen Road and State Route 99. The attractiveness of State Route 58 west as a major freight corridor is relatively unchanged from the no-build condition, as more attractive alternative routes, such as State Route 46, offer less delay to commercial vehicles traveling through, but not destined to, metropolitan Bakersfield.

   Build alternatives A, B and C reduce the number of traffic signals between Interstate 5 and State Route 99 to two locations, at the intersections of Stockdale Highway with Enos Lane (State Route 43) and Heath Road. Once adopted as State Route 58, this route will become the major freight corridor for east–west heavy truck movements through Kern County.

   The transportation systems management alternative reduces travel time, but does not address interstate trucking needs. Build alternatives A, B and C provide a nearly non-stop route between Interstate 5 and State Route 99.

5. Improve local east–west circulation and reduce congestion to accommodate existing and planned land uses in accordance with adopted growth projections.

   Compared to the no-build alternative, alternative M, the transportation systems management alternative, attracts 11,000 to 34,000 additional vehicles per day to Rosedale Highway, thereby reducing traffic volumes on Hageman Road, Westside Parkway, Stockdale Highway and Ming Avenue. Planned commercial land uses along Rosedale Highway benefit from higher drive by levels of traffic, while residential serving roadways benefit from reduced traffic volumes.

   Build alternatives A, B and C each accommodate more than 100,000 vehicles per day on the segment of State Route 58 immediately west of State Route 99. These alternatives will remove through traffic from east–west local arterial streets, allowing residents the

opportunity to access commercial establishments along these roadways under less congested conditions.

The transportation systems management alternative, as well as build alternatives A, B and C, all meet this criterion.

6. Improve operations and reduce congestion of the shared portion of State Route 58 and State Route 99.

   Compared to the no-build alternative, alternative M adds more than 20,000 additional vehicles per day to State Route 99 over the shared section with State Route 58. No improvements to State Route 99 are included with the transportation systems management alternative, by virtue of the cost associated with constructing auxiliary lanes between State Route 58 west and State Route 58 east. Overall level of service degrades slightly along the shared portion of State Route 58 and State Route 99, compared to the no-build alternative.

   The transportation systems management alternative does not meet or address this criterion.

   Figures 6-8, 6-9, and 6-10 illustrate the location of congestion along State Route 58 and the portion of State Route 99 that will no longer be shared with State Route 58 under build alternatives A, B and C, respectively. Comparison of these graphics with Figure 6-5 indicates that the extent of the bottleneck surrounding the State Route 58/State Route 99 freeway system interchange will be significantly reduced in the southbound direction along State Route 99, and eliminated in the northbound direction. Poor performance will remain between Rosedale Highway and California Avenue in the southbound direction, however.

   Build alternatives A, B and C address and largely meet this criterion.

Overall, the transportation systems management alternative partially addresses the need and purpose of the Centennial Corridor project, whereas build alternatives A, B and C fully address the need and purpose of the project.

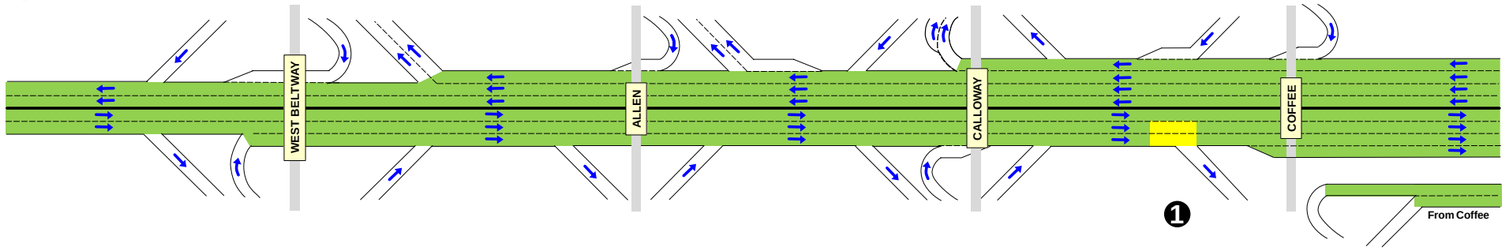
6.6 System-wide Performance of the Project Alternatives

To provide a quantified measure of overall system-wide performance, the four build alternatives were evaluated using a traffic impact analysis computer software product developed for the Federal Highway Administration. This product, the Surface Transportation Efficiency Analysis Model (STEAM) version 2.0, provides a quantitative measurement of economic impacts, natural resource usage, environmental impacts, and net monetary benefits (or costs).

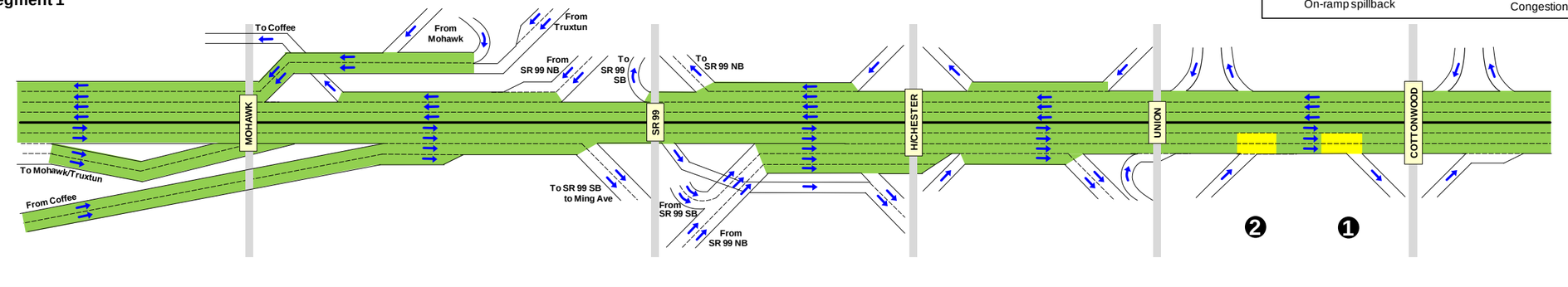
The STEAM 2.0 assessment found that the transportation systems management alternative (build alternative M) provides approximately $22.3 million of monetized benefits per year assuming design year (2038) traffic conditions, compared with $75.3 million of benefits per year for build alternative A, $68.8 million of benefits per year for build alternative B, and $72.7 million of benefits per year for build alternative C, all assuming year 2038 traffic conditions. Life cycle, or

STATE ROUTE 58

Segment 2

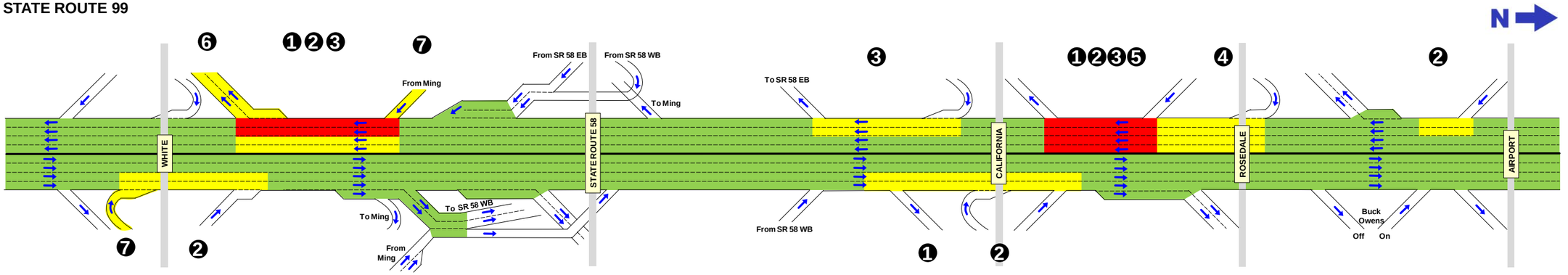


Segment 1



CONGESTION CAUSES	DESCRIPTION
Heavy off-ramp volume	Vehicles crowd right lanes of freeway trying to exit
Heavy on-ramp volume	Vehicles entering freeway crowd right lanes of freeway
On-ramp to off-ramp weave conflicts	Heavy volumes of traffic entering freeway conflict with heavy volumes of traffic exiting freeway
Spillback from bottleneck on mainline	Traffic congestion ahead causes approaching traffic to slow speed and compress space between vehicles
Bottleneck	Traffic volumes on mainline (combined on-ramp, weaving, off-ramp, through movements) exceed capacity, causing traffic to slow and compress space between vehicles
Off-ramp/arterial street bottleneck	Congestion on arterial street limits throughput of freeway off-ramp
On-ramp spillback	Congestion on freeway limits throughput of on-ramp to freeway

STATE ROUTE 99

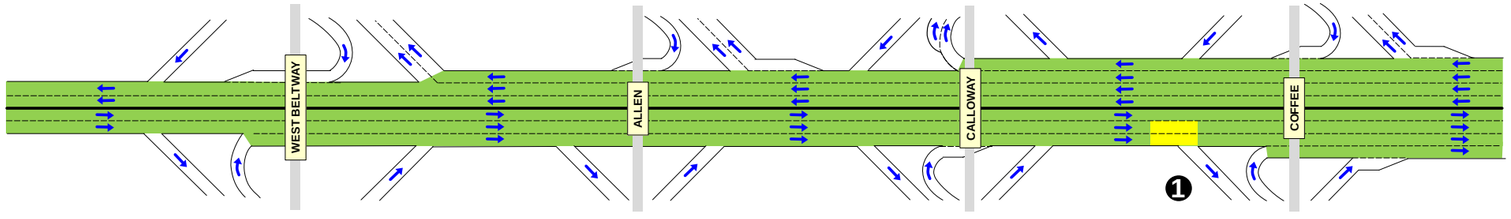


LOS A, B, C, D
LOS E
LOS F

Figure 6-8: Alternative A Year 2038 Forecast Traffic Operational Conditions on State Route 58 and State Route 99

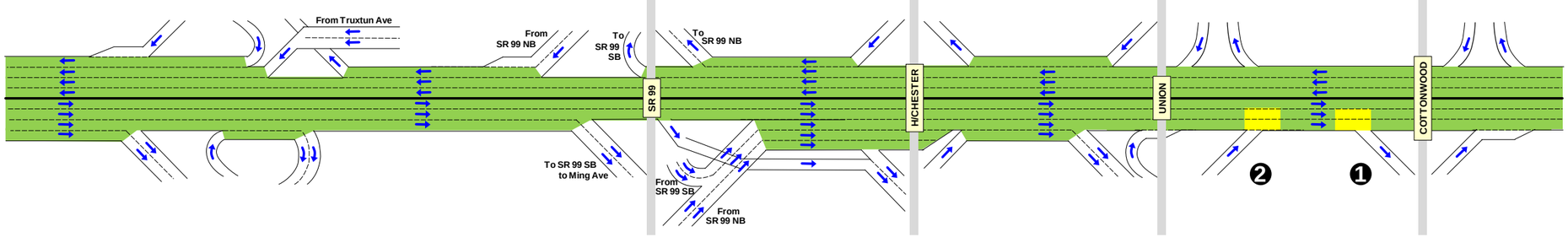
STATE ROUTE 58

Segment 2

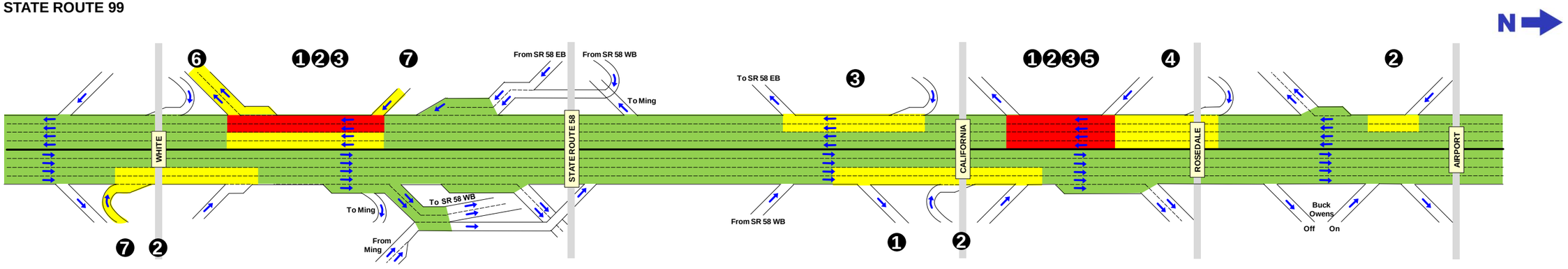


CONGESTION CAUSES	DESCRIPTION
Heavy off-ramp volume	Vehicles crowd right lanes of freeway trying to exit
Heavy on-ramp volume	Vehicles entering freeway crowd right lanes of freeway
On-ramp to off-ramp weave conflicts	Heavy volumes of traffic entering freeway conflict with heavy volumes of traffic exiting freeway
Spillback from bottleneck on mainline	Traffic congestion ahead causes approaching traffic to slow speed and compress space between vehicles
Bottleneck	Traffic volumes on mainline (combined on-ramp, weaving, off-ramp, through movements) exceed capacity, causing traffic to slow and compress space between vehicles
Off-ramp/arterial street bottleneck	Congestion on arterial street limits throughput of freeway off-ramp
On-ramp spillback	Congestion on freeway limits throughput of on-ramp to freeway

Segment 1



STATE ROUTE 99

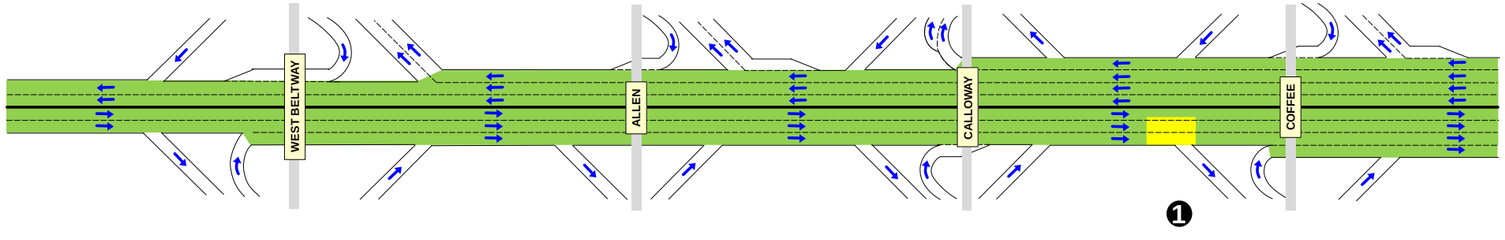


LOS A, B, C, D
LOS E
LOS F

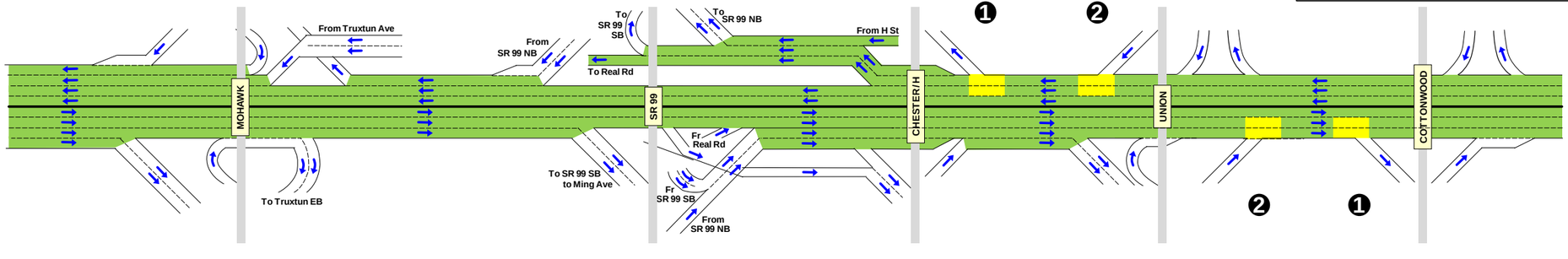
Figure 6-9: Alternative B Year 2038 Forecast Traffic Operational Conditions on State Route 58 and State Route 99

STATE ROUTE 58

Segment 2

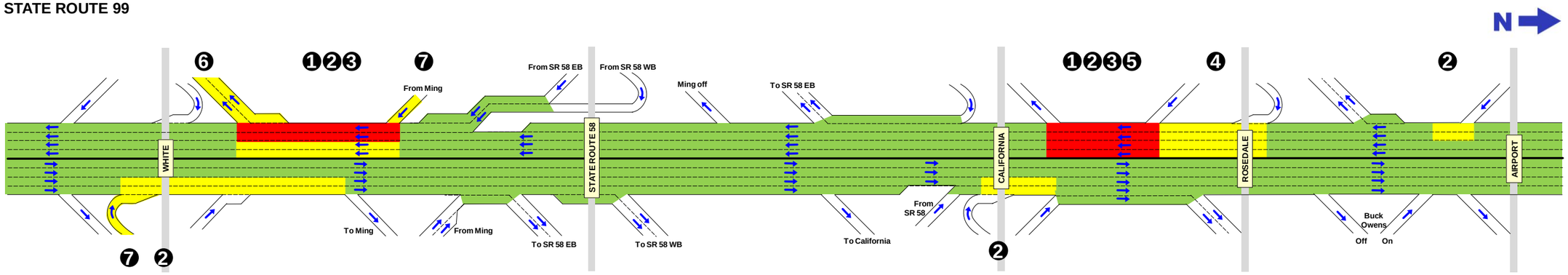


Segment 1



CONGESTION CAUSES	DESCRIPTION
Heavy off-ramp volume	Vehicles crowd right lanes of freeway trying to exit
Heavy on-ramp volume	Vehicles entering freeway crowd right lanes of freeway
On-ramp to off-ramp weave conflicts	Heavy volumes of traffic entering freeway conflict with heavy volumes of traffic exiting freeway
Spillback from bottleneck on mainline	Traffic congestion ahead causes approaching traffic to slow speed and compress space between vehicles
Bottleneck	Traffic volumes on mainline (combined on-ramp, weaving, off-ramp, through movements) exceed capacity, causing traffic to slow and compress space between vehicles
Off-ramp/arterial street bottleneck	Congestion on arterial street limits throughput of freeway off-ramp
On-ramp spillback	Congestion on freeway limits throughput of on-ramp to freeway

STATE ROUTE 99



LOS A, B, C, D
LOS E
LOS F

Figure 6-10: Alternative C Year 2038 Forecast Traffic Operational Conditions on State Route 58 and State Route 99

twenty years of benefits, amount to $605.3 million for the transportation systems management alternative, compared with more than $1 billion for alternatives A, B and C. The capital cost of the transportation systems management alternative has been preliminarily estimated as $252 million compared with an estimated $570 to $691 million for alternatives A, B and C. Thus, the transportation systems management alternative returns approximately 60 percent of the benefits provided by the full-build alternatives, but is more cost-effective. Over time, beyond the 20-year life cycle design year horizon, the transportation systems management alternative benefits continue to decline, year by year, while build alternatives A, B and C increase due to residual capacity being available to meet growth beyond 2038.

Table 6-2 provides specific information regarding the benefits calculated using the STEAM 2.0 computer software product, while Table 6-3 presents a summary of the cost versus benefit analysis.

Table 6-2. Summary of Centennial Corridor Project Benefits *(Year 2038)*

BENEFIT TYPE	BUILD ALTERNATIVE M	BUILD ALTERNATIVE A	BUILD ALTERNATIVE B	BUILD ALTERNATIVE C
User Benefits				
In-vehicle travel time	$ 16,259,900	$ 64,133,300	$ 60,348,900	$ 64,691,200
Fuel costs	2,576,200	6,395,300	5,149,700	5,898,300
Non-fuel operating costs	(213,000)	(2,248,500)	(3,002,300)	(3,159,400)
Internal accident costs	3,857,300	7,920,100	5,645,600	6,087,000
Revenue Transfers	$ (680,200)	(1,699,500)	$ (1,370,700)	$ (1,568,400)
Reduction in External Costs				
Emissions Global warming Noise	See detailed technical studies			
Accident	$ 474,500	$ 973,500	$ 694,500	$ 748,800
Other mileage based	0	0	0	0
Total Benefits $/year in 2038	**$ 22,274,700**	**$ 75,264,200**	**$ 68,836,400**	**$ 72,697,500**
Total Benefits $/year in 2018	**32,030,800**	**7,759,000**	**14,266,100**	**30,803,200**
Life Cycle Benefits 2018–2040 Total	**$605,287,000**	**$1,030,458,000**	**$1,014,868,000**	**$1,230,735,000**

Source: Parsons, based on STEAM 2.0

Table 6-3. Summary of Life-Cycle Benefits and Costs

METRIC	BUILD ALTERNATIVE M	BUILD ALTERNATIVE A	BUILD ALTERNATIVE B	BUILD ALTERNATIVE C
Cost	$252,000,000	$ 690,963,000	$ 569,946,000	$ 665,879,000
Present value of costs	$229,180,000	$ 627,607,000	$ 516,534,000	$ 603,614,000
Total benefits (Q2 2018–2040)	$605,287,000	$1,030,458,000	$1,014,868,000	$1,230,735,000
Present value of benefits	$433,029,000	$ 679,807,000	$ 677,650,000	$ 838,365,000
Present value benefit/cost ratio	1.9	1.1	1.3	1.4
Payback period	10 years	22 years	19 years	18 years

Given these findings, the authors of this traffic study conclude that the transportation systems management alternative is not a feasible alternative for meeting the long-term needs identified for the Centennial Corridor project.

6.7 Quantitative Traffic Performance of Build Alternatives A, B and C

Tables 6-4 through 6-7 present freeway mainline performance of AM peak hour conditions for the no-build alternative and build alternatives A, B and C. Graphic representations of these performance results were provided previously as Figures 6-5 and 6-8 through 6-10. On the whole, there is no significant difference between the build alternatives A, B and C insofar as the quality of service provided to the traveling public. None of the build alternatives stand above or below other build alternatives, except that all provide much better performance compared to the no-build alternative and the transportation system management alternative (which cannot be comparably measured).

In addition to quantifying freeway performance, level of service, a measure of traffic congestion, was calculated for 79 study area intersections. The locations of these intersections are illustrated on Figure 6-11. Level of service A through D meet quality of delay policy standards in metropolitan Bakersfield; while LOS E is on the cusp of excessive congestion, characterized by low speeds and traffic backups at intersections. As metropolitan areas increase in size and level of congestion, LOS E is often considered to be the limit of acceptable delay. At present, LOS D is the limit of acceptable delay in Kern County and metropolitan Bakersfield.

Table 6-8 provides a side-by-side comparison of intersection level of service for existing conditions versus year 2038 conditions. Alternatives A, B and C all perform, on balance, equal to the no-build alternative. There are spot locational differences due to the build alternatives reduction or elimination of bottlenecks along State Route 99, which allow more traffic to exit or enter the freeway at ramp terminal and adjacent intersections.

Comparing alternatives A, B and C with one another, alternative C yields one additional intersection failure (LOS F) compared with alternatives A and B. Intersection #51, Stockdale Highway at Real Road, fails under alternative C during the PM peak hour, as it does under no-build conditions. The intersection does not fail with alternatives A and B because the connection of Real Road to State Route 58 east is eliminated under these two build alternatives. Hence, less traffic is able to access Real Road and Stockdale Highway, in turn.

6.8 Local Circulation Impacts

In the case of each project alternative (A, B, and C), modifications to local streets and properties are required which affect travel access. The particular modifications and impacts depend on the alternative examined. Several local streets will be shortened, modified, or removed, but little or no disruption to existing circulation patterns is expected. In the limited number of cases where through traffic is eliminated on an existing local roadway, an adjacent or nearby street will provide an alternative route.

Adjustments to local roadways as a result of the proposed project are not expected to impact the provision of emergency services, such as fire or police, or affect access to health care facilities. Some minor adjustments with respect to route maps and patrol duties for fire and police

Table 6-4. No-Build Mainline Freeway Analysis Summary Results

Freeway Segment	NO-BUILD AM PEAK						NO-BUILD PM PEAK					
	Demand (vph)	Served (vph)	% Served	Speed (MPH)	Density (veh/ln/mi)	LOS (HCM 2000)	Demand (vph)	Served (vph)	% Served	Speed (MPH)	Density (veh/ln/mi)	LOS (HCM 2000)
SR-99 NB Mainline												
SR 99 NB south end of the network to White Lane off-ramp	7,025	6,570	94%	38	44.0	E	6,580	6,570	100%	60	28	D
White Lane off-ramp to White Lane loop on-ramp	5,960	5,527	93%	31	44.0	E	5,485	5,360	98%	59	23	C
White Lane loop on-ramp to White Lane direct on-ramp	7,565	5,850	77%	28	53.0	F	7,130	6,226	87%	47	33	D
White Lane diagonal on-ramp to Ming Avenue off-ramp	8,260	6,159	75%	23	66.0	F	7,740	6,805	88%	31	57	F
Ming Avenue off-ramp to Ming Avenue on-ramp	7,470	5,204	70%	18	72.0	F	6,920	5,857	85%	20	73	F
Ming Avenue on-ramp to SR 58 EB/Wible Road off-ramp	9,055	6,807	75%	32	47.0	F	8,415	7,374	88%	34	48	F
SR 58 EB/Wible Road off-ramp to Wible Road on-ramp	6,230	4,624	74%	61	19.0	C	5,915	5,185	88%	61	21	C
Wible Road on-ramp to SR 58 WB on-ramp	6,870	5,135	75%	61	21.0	C	6,525	5,683	87%	61	23	C
SR 58 WB on-ramp to California Avenue off-ramp	8,655	6,950	80%	58	29.0	D	8,240	7,383	90%	58	31	D
California Avenue off-ramp to California Avenue loop on-ramp	7,475	5,982	80%	62	24.0	C	7,360	6,598	90%	61	27	D
California Avenue loop on-ramp to California Avenue diagonal on-ramp	8,040	6,396	80%	60	26.0	D	8,100	7,058	87%	60	29	D
California Avenue diagonal on-ramp to Rosedale Highway off-ramp	8,280	6,349	77%	60	25.0	C	8,430	7,026	83%	58	28	D
Rosedale Highway off-ramp to Buck Owens Boulevard/Sillect Avenue off-ramp	5,840	4,599	79%	62	19.0	C	6,340	5,365	85%	62	22	C
Buck Owens Boulevard/Sillect Avenue off-ramp to Buck Owens Boulevard/Sillect Avenue on-ramp	5,015	3,917	78%	63	16.0	B	5,790	4,923	85%	62	20	C
Buck Owens Boulevard/Sillect Avenue on-ramp to Airport Drive off-ramp	5,615	4,451	79%	61	18.0	C	6,540	5,607	86%	60	24	C
Airport Drive off-ramp to SR 99 NB north end of the network	3,865	3,168	82%	63	13.0	B	5,125	4,390	86%	62	18	B
SR-99 SB Mainline												
SR 99 SB north end of the network to Airport Drive on-ramp	3,895	3,895	100%	64	15.0	B	4,595	4,595	100%	63	18	C
Airport Drive on-ramp to Rosedale Highway off-ramp	5,320	5,320	100%	60	22.0	C	6,710	6,412	96%	42	39	E
Rosedale Highway off-ramp to Rosedale Highway loop on-ramp	4,245	4,245	100%	63	17.0	B	5,615	5,417	96%	60	23	C
Rosedale Highway loop on-ramp to Rosedale Highway diagonal on-ramp	5,395	5,395	100%	59	19.0	C	6,995	6,891	99%	47	32	D
Rosedale Highway diagonal on-ramp to California Avenue off-ramp	7,085	7,085	100%	55	30.0	D	8,620	8,240	96%	52	39	E
California Avenue off-ramp to California Avenue on-ramp	5,885	5,885	100%	62	23.0	C	7,430	7,076	95%	40	45	E
California Avenue on-ramp to SR 58 EB/Stockdale Highway off-ramp	6,605	6,605	100%	55	27.0	D	8,480	8,048	95%	46	44	E
SR 58 EB/Stockdale Highway off-ramp to SR 58 WB on-ramp	4,715	4,715	100%	62	18.0	B	6,385	6,089	95%	55	28	D
SR 58 WB on-ramp to Real Road on-ramp	6,265	5,829	93%	52	34.0	D	8,140	7,419	91%	26	70	F
Real Road on-ramp to Ming Avenue off-ramp	6,775	6,721	99%	54	28.0	D	8,795	8,258	94%	42	47	F
Ming Avenue off-ramp to Ming Avenue on-ramp	5,545	5,410	98%	62	21.0	C	7,050	6,578	93%	61	27	D
Ming Avenue on-ramp to White Lane off-ramp	6,235	6,043	97%	61	24.0	C	7,885	7,452	95%	60	30	D
White Lane off-ramp to White Lane loop on-ramp	4,740	4,628	98%	63	18.0	C	5,855	5,522	94%	62	22	C
White Lane loop on-ramp to White Lane diagonal on-ramp	4,950	4,828	98%	62	19.0	C	6,430	6,018	94%	61	25	C
White Lane diagonal on-ramp to SR 99 SB south end of the network	5,410	4,952	92%	62	20.0	C	7,105	6,430	90%	61	26	D
WSP EB Mainline												
Westside Parkway west end of the network to West Beltway off-ramp	2,190	2,190	100%	47	24	C	2,180	2,155	99%	54	24	C
West Beltway off-ramp to West Beltway loop on-ramp	1,390	1,341	96%	61	11	B	1,225	1,130	92%	61	9	A
West Beltway loop on-ramp to West Beltway diagonal on-ramp	2,574	2,518	98%	61	14	B	2,100	1,985	95%	61	11	A
West Beltway diagonal on-ramp to Allen Road off-ramp	3,124	3,031	97%	63	16	B	2,245	2,120	94%	63	11	B
Allen Road off-ramp to Allen Road on-ramp	2,929	2,842	97%	63	15	B	2,065	1,967	95%	63	10	A
Allen Road on-ramp to Calloway Drive off-ramp	4,739	4,642	98%	60	26	C	3,675	3,524	96%	61	19	C
Calloway Drive off-ramp to Calloway Drive loop on-ramp	3,631	3,583	99%	63	19	C	2,746	2,627	96%	64	14	B
Calloway Drive loop on-ramp to Calloway Drive diagonal on-ramp	4,115	4,034	98%	62	22	C	3,127	2,974	95%	62	16	B
Calloway Drive diagonal on-ramp to Coffee Drive off-ramp	5,029	4,989	99%	59	28	D	3,889	3,706	95%	61	20	C
Coffee Drive off-ramp to Coffee Drive loop on-ramp	2,844	2,844	100%	64	15	B	2,184	2,058	94%	64	11	A
Coffee Drive loop on-ramp to Coffee Drive diagonal on-ramp	3,229	3,229	100%	63	13	B	2,614	2,469	94%	64	10	A
Coffee Drive diagonal on-ramp to Mohawk Street off-ramp	3,779	3,779	100%	63	15	B	3,089	2,920	95%	63	11	B
WSP WB Mainline												
Mohawk Street loop on-ramp to Mohawk Street diagonal ramp	1,957	1,957	100%	63	11	A	3,170	2,973	94%	62	16	B
Mohawk Street diagonal ramp to Coffee Drive off-ramp	2,962	2,919	99%	62	11	B	4,585	4,160	91%	62	16	B
Coffee Drive off-ramp to Coffee Drive loop on-ramp	1,777	1,757	99%	64	7	A	3,370	3,199	95%	64	13	B
Coffee Drive loop on-ramp to Coffee Drive diagonal on-ramp	2,332	2,225	95%	63	9	A	4,350	4,109	94%	62	17	B
Coffee Drive diagonal on-ramp to Calloway Drive diagonal off-ramp	2,977	2,840	95%	63	12	B	5,375	5,148	96%	61	22	C
Calloway Drive diagonal off-ramp to Calloway Drive loop off-ramp	2,665	2,550	96%	62	14	B	4,865	4,614	95%	61	25	C
Calloway Drive loop off-ramp to Calloway Drive on-ramp	2,085	1,996	96%	64	10	A	3,850	3,670	95%	63	20	C
Calloway Drive on-ramp to Allen Road off-ramp	2,550	2,446	96%	63	13	B	4,835	4,628	96%	60	26	C
Allen Road off-ramp to Allen Road on-ramp	1,700	1,643	97%	64	9	A	2,955	2,825	96%	63	15	B
Allen Road on-ramp to West Beltway off-ramp	1,925	1,864	97%	63	10	A	3,285	3,138	96%	62	17	B
West Beltway off-ramp to West Beltway loop on-ramp	865	825	95%	64	6	A	1,410	1,363	97%	63	11	A
West Beltway loop on-ramp to West Beltway diagonal on-ramp	1,260	1,158	92%	62	9	A	1,955	1,831	94%	61	15	B
West Beltway diagonal on-ramp to Westside Parkway west end of the network	1,550	1,452	94%	60	12	B	2,305	2,181	95%	58	19	C
SR58 EB Mainline												
SR 99 on-ramp to H Street off-ramp	4,850	4,300	89%	58	25	C	4,585	4,138	90%	59	24	C
H Street off-ramp to Chester Avenue on-ramp	4,305	3,815	89%	62	21	C	4,110	3,701	90%	62	20	C
Chester Avenue on-ramp to Union Avenue off-ramp	4,900	4,494	92%	59	25	C	4,950	4,535	92%	60	25	C
Union Avenue off-ramp to Union Avenue loop on-ramp	3,985	3,718	93%	62	20	C	4,305	3,967	92%	62	21	C
Union Avenue loop on-ramp to Union Avenue diagonal on-ramp	4,285	3,969	93%	62	22	C	5,075	4,575	90%	60	25	C
Union Avenue diagonal on-ramp to Cottonwood Road off-ramp	4,560	4,249	93%	61	23	C	5,710	5,226	92%	60	29	D
Cottonwood Road off-ramp to Cottonwood Road on-ramp	4,010	3,751	94%	62	20	C	5,110	4,698	92%	62	25	C
Cottonwood Road on-ramp to SR 58 east end of the network	4,315	4,052	94%	62	22	C	5,595	5,169	92%	61	28	D
SR58 WB Mainline												
SR 58 east end of the network to Cottonwood Road off-ramp	4,870	4,870	100%	63	26	D	4,090	4,090	100%	63	22	C
Cottonwood Road off-ramp to Cottonwood Road on-ramp	4,615	4,615	100%	62	25	C	3,850	3,830	99%	63	20	C
Cottonwood Road on-ramp to Brundage Lane off-ramp	4,855	4,855	100%	61	27	D	4,250	4,226	99%	62	23	C
Brundage Lane off-ramp to Brundage Lane on-ramp	3,975	3,931	99%	62	21	C	3,655	3,655	100%	62	20	C
Brundage Lane on-ramp to Union Avenue on-ramp	4,195	4,123	98%	61	23	C	4,050	4,008	99%	61	22	C
Union Avenue on-ramp to Chester Avenue off-ramp	4,595	4,505	98%	60	25	C	4,605	4,527	98%	60	25	C
Chester Avenue off-ramp to H Street on-ramp	3,860	3,778	98%	62	20	C	3,960	3,850	97%	46	29	D
H Street on-ramp to SR 99 NB off-ramp	4,265	4,265	100%	56	26	C	4,555	4,323	95%	39	37	E
SR 99 NB off-ramp to SR 99 SB off-ramp	2,480	2,480	100%	58	14	B	2,840	2,677	94%	23	40	E

Bottleneck Location

Queue

Table 6-5. Alternative A Mainline Freeway Analysis Summary Results

Freeway Segment	ALT. A AM PEAK						ALT. A PM PEAK					
	Demand (vph)	Served (vph)	%Served	Speed (MPH)	Density (veh/ln/mi)	LOS (HCM 2000)	Demand (vph)	Served (vph)	%Served	Speed (MPH)	Density (veh/ln/mi)	LOS (HCM 2000)
SR-99 NB Mainline												
SR 99 NB south end of the network to White Lane off-ramp	7,075	7,075	100%	59	31	D	6,655	6,655	100%	62	27	D
White Lane off-ramp to White Lane loop on-ramp	5,950	5,848	98%	61	24	C	5,575	5,566	100%	62	23	C
White Lane loop on-ramp to White Lane direct on-ramp	7,590	7,162	94%	47	38	E	7,230	6,686	92%	51	33	D
White Lane direct on-ramp to Ming Avenue off-ramp	8,285	8,015	97%	58	32	D	7,915	7,395	93%	56	30	D
Ming Avenue off-ramp to C-D (SR 58 WB) off-ramp	7,370	7,370	100%	60	25	C	7,065	6,781	96%	53	26	C
SR 58 WB off-ramp to SR 58 EB off-ramp	6,245	6,117	98%	60	23	C	5,935	5,456	92%	60	21	C
SR 58 EB off-ramp to Ming Avenue on-ramp	4,990	4,990	100%	62	20	C	4,270	4,065	95%	63	16	B
Ming Avenue on-ramp to SR 58 on-ramp	5,990	5,888	98%	60	25	C	5,120	4,836	94%	61	20	C
SR 58 on-ramp to California Avenue off-ramp	7,175	7,163	100%	58	30	D	6,240	6,016	96%	60	24	C
California Avenueoff-ramp to California Avenue loop on-ramp	6,025	6,025	100%	62	24	C	5,530	5,308	96%	62	21	C
California Avenue loop on-ramp to California Avenue direct on-ramp	7,075	6,780	96%	58	29	D	6,905	6,108	88%	57	27	D
California Avenue direct on-ramp to Rosedale Highway off-ramp	7,555	6,881	91%	57	28	D	7,805	6,598	85%	53	30	D
Rosedale Highway off-ramp to Buck Owens Boulevard/Sillect Avenue off-ramp	5,590	5,192	93%	61	21	C	6,005	5,209	87%	62	21	C
Buck Owens Boulevard/Sillect Avenue off-ramp to Buck Owens Boulevard/Sillect Avenue on-ramp	4,795	4,432	92%	63	18	B	5,605	4,859	87%	63	19	C
Buck Owens Boulevard/Sillect Avenue on-ramp to Airport Drive off-ramp	5,515	5,124	93%	59	22	C	6,395	5,618	88%	60	24	C
Airport Dr off-ramp to SR 99 NB north end of the network	3,775	3,556	94%	63	14	B	5,030	4,446	88%	62	18	B
SR-99 SB Mainline												
SR99 SB north end of the network to Airport Dr On Ramp	4,035	4,035	100%	64	16	B	4,735	4,735	100%	63	19	C
Airport Dr On Ramp to Rosedale Hwy Off Ramp	5,485	5,450	99%	60	22	C	6,805	6,805	100%	55	30	D
Rosedale Hwy Off Ramp to Rosedale Hwy Loop On Ramp	4,110	4,110	100%	63	16	B	5,495	5,495	100%	60	24	C
Rosedale Hwy Loop On Ramp to Rosedale Hwy Direct On Ramp	5,210	5,210	100%	55	21	C	6,870	6,870	100%	42	36	E
Rosedale Hwy Direct On Ramp to California Ave Off Ramp	6,045	6,045	100%	57	26	D	8,210	8,151	99%	40	51	F
California Ave Off Ramp to California Ave On Ramp	4,550	4,550	100%	62	19	C	6,555	6,442	98%	60	27	D
California Ave On Ramp to SR58 EB Off Ramp	5,110	5,110	100%	60	21	C	7,495	7,202	96%	58	30	D
SR58 EB Off Ramp to Ming Ave Off Ramp	4,155	4,155	100%	62	17	B	6,055	5,814	96%	61	24	C
Ming Ave Off Ramp to SR58 WB On Ramp	3,220	3,220	100%	63	13	B	4,850	4,617	95%	62	18	C
SR58 WB On Ramp to Ming Ave On Ramp	5,745	5,745	100%	62	18	B	7,590	7,109	94%	49	28	D
Ming Ave On Ramp to White Ln Off Ramp	6,530	6,516	100%	59	27	D	8,435	7,514	89%	34	56	F
White Ln Off Ramp to White Ln Loop On Ramp	4,860	4,841	100%	63	19	C	6,365	5,629	88%	61	23	C
White Ln Loop On Ramp to White Ln Direct On Ramp	5,120	4,953	97%	62	20	C	6,915	6,129	89%	61	25	C
White Ln Direct On Ramp to SR99 SB south end of the network	5,565	5,193	93%	62	21	C	7,560	6,506	86%	61	27	D
WSP EB Mainline												
Westside Parkway west end of the network to West Beltway off-ramp	2,230	2,230	100%	47	24	C	2,220	2,217	100%	44	25	C
West Beltway off-ramp to West Beltway loop on-ramp	1,485	1,485	100%	61	12	B	1,350	1,267	94%	60	11	A
West Beltway loop on-ramp to West Beltway direct on-ramp	3,010	2,796	93%	61	15	B	2,690	2,586	96%	61	14	B
West Beltway direct on-ramp to Allen Road off-ramp	3,300	3,073	93%	62	16	B	2,965	2,835	96%	63	15	B
Allen Road off-ramp to Allen Road on-ramp	2,920	2,699	92%	63	14	B	2,655	2,543	96%	63	13	B
Allen Road on-ramp to Calloway Drive off-ramp	4,920	4,665	95%	60	26	C	4,530	4,351	96%	61	24	C
Calloway Drive off-ramp to Calloway Drive loop on-ramp	3,960	3,796	96%	63	20	C	3,730	3,606	97%	63	19	C
Calloway Drive loop on-ramp to Calloway Drive direct on-ramp	4,900	4,653	95%	59	26	D	4,770	4,558	96%	58	26	D
Calloway Drive direct on-ramp to Coffee Drive off-ramp	6,050	5,867	97%	59	32	D	5,880	5,703	97%	60	31	D
Coffee Drive off-ramp to Truxtun Avenue/Mohawk Street off-ramp	5,025	4,836	96%	61	21	C	5,055	4,869	96%	62	21	C
Truxtun Avenue off-ramp to Coffee Drive on-ramps	1,935	1,839	95%	63	15	B	2,355	2,296	97%	63	18	C
Coffee Drive on-ramps to SR 99 SB and Ming Avenue C-D off-ramp	3,810	3,700	97%	61	20	C	4,525	4,438	98%	61	24	C
SR 99 SB off-ramp (and C-D Ming Avenue) to H Street off-ramp	1,930	1,836	95%	63	15	B	2,355	2,309	98%	62	19	C
H Street off-ramp to SR 99 NB and SB on-ramp	1,648	1,564	95%	63	12	B	2,047	1,986	97%	63	16	B
SR 99 NB and SB on-ramp to Chester Avenue on-ramp	3,535	3,408	96%	60	12	B	4,745	4,275	90%	58	16	B
Chester Avenue on-ramp to Union Avenue off-ramp	4,560	4,401	97%	61	18	C	5,935	5,410	91%	60	23	C
Union Avenue off-ramp to Union Avenue loop on-ramp	3,525	3,405	97%	63	18	C	4,910	4,517	92%	62	24	C
Union Avenue loop on-ramp to Union Avenue direct on-ramp	3,865	3,698	96%	62	20	C	5,575	5,086	91%	59	29	D
Union Avenue direct on-ramp to Cottonwood Road off-ramp	4,190	4,044	97%	62	22	C	6,150	5,727	93%	59	32	D
Cottonwood Road off-ramp to Cottonwood Road on-ramp	3,560	3,445	97%	63	18	C	5,245	4,893	93%	62	26	D
Cottonwood Road on-ramp to SR 58 east end of the network	3,870	3,739	97%	62	20	C	5,545	5,172	93%	61	28	D
WSP WB Mainline												
SR 58 east end of the network to Cottonwood Road off-ramp	5,270	5,270	100%	63	28	D	5,030	5,030	100%	63	27	D
Cottonwood Road off-ramp to Cottonwood Road on-ramp	5,035	5,035	100%	62	27	D	4,725	4,717	100%	62	25	C
Cottonwood Road on-ramp to Brundage Lane off-ramp	5,350	5,350	100%	56	33	D	5,255	5,219	99%	60	29	D
Brundage Lane off-ramp to Brundage Lane on-ramp	4,170	4,082	98%	61	22	C	4,265	4,222	99%	62	23	C
Brundage Lane on-ramp to Union Avenue on-ramp	4,535	4,409	97%	61	24	C	4,625	4,545	98%	60	25	C
Union Avenue on-ramp to Chester Avenue off-ramp	5,100	4,963	97%	61	20	C	5,395	5,323	99%	60	22	C
Chester Avenue off-ramp to H Street on-ramp	4,070	3,952	97%	62	21	C	4,280	4,249	99%	62	23	C
H Street on-ramp to SR 99 NB off-ramp	4,705	4,612	98%	61	19	C	4,940	4,901	99%	60	20	C
SR 99 NB off-ramp to SR 99 SB off-ramp	3,520	3,444	98%	61	19	C	3,820	3,795	99%	61	21	C
SR 99 SB off-ramp to SR 99 NB on-ramp	2,320	2,218	96%	62	18	B	2,595	2,581	99%	62	21	C
SR 99 NB on-ramp to Coffee Drive off-ramp	3,820	3,753	98%	61	20	C	4,225	4,290	102%	61	23	C
Coffee Drive off-ramp to Mohawk Street/Truxtun Avenue on-ramp	1,870	1,843	99%	63	15	B	2,650	2,650	100%	62	22	C
Mohawk Street/Truxtun Avenue on-ramp to Coffee Drive loop on-ramp	4,030	3,966	98%	63	16	B	6,430	6,355	99%	62	26	C
Coffee Drive loop on-ramp to Coffee Drive direct on-ramp	4,180	4,101	98%	63	16	B	6,670	6,556	98%	61	27	D
Coffee Drive direct on-ramp to Calloway Drive direct off-ramp	4,480	4,348	97%	62	17	B	7,220	7,073	98%	60	29	D
Calloway Drive direct off-ramp to Calloway Drive loop off-ramp	3,830	3,689	96%	62	15	B	6,225	6,091	98%	61	25	C
Calloway Drive loop off-ramp to Calloway Drive on-ramp	2,920	2,800	96%	63	15	B	4,875	4,764	98%	62	26	C
Calloway Drive on-ramp to Allen Road off-ramp	3,420	3,287	96%	62	18	B	5,755	5,589	97%	58	32	D
Allen Road off-ramp to Allen Road on-ramp	2,270	2,168	96%	64	11	B	3,525	3,454	98%	63	18	C
Allen Road on-ramp to West Beltway off-ramp	2,620	2,492	95%	62	13	B	3,895	3,792	97%	61	21	C
West Beltway off-ramp to West Beltway loop on-ramp	1,120	1,090	97%	64	9	A	1,510	1,468	97%	63	12	B
West Beltway loop on-ramp to West Beltway direct on-ramp	1,440	1,318	92%	62	11	A	1,935	1,842	95%	61	15	B
West Beltway direct on-ramp to Westside Parkway west end of the network	1,745	1,600	92%	60	13	B	2,280	2,184	96%	59	19	C
SR99 NB C-D												
SR 99 NB C-D on-ramp to Westside Parkway C-D off-ramp	2,500	2,500	100%	53	16	B	2,480	2,480	100%	53	16	B
SR99 SB C-D												
Westside Parkway C-D on-ramp to SR 99 SB C-D on-ramp	2,525	2,525	100%	45	19	C	2,740	2,662	97%	42	21	C
WSP EB C-D 1												
Begin C-D (Coffee Drive loop on-ramp to Coffee Drive direct on-ramp)	915	915	100%	49	19	C	1,100	1,100	100%	49	23	C
Coffee Drive direct on-ramp to end of C-D network (Westside Parkway EB)	1,875	1,875	100%	53	18	B	2,170	2,155	99%	53	20	C
WSP EB C-D 2												
Begin C-D to Mohawk Street off-ramp	3,090	3,030	98%	52	23	C	2,700	2,608	97%	53	20	C
Mohawk Street off-ramp to Mohawk Street on-ramp	1,580	1,536	97%	54	14	B	1,300	1,250	96%	54	12	B
WSP EB C-D 3												
WSP EB C-D On Ramp to SR 99 SB Off Ramp	1,880	1,851	98%	52	15	B	2,170	2,107	97%	51	17	B
SR 99 SB Off Ramp to SR 99 SB C-D On Ramp	555	546	98%	47	7	A	655	626	96%	47	8	A
SR 99 SB C-D On Ramp to Ming Ave	1,490	1,468	99%	48	15	B	1,860	1,805	97%	44	23	C
WSP WB C-D												
Truxtun Avenue on-ramp to Mohawk Street loop on-ramp	800	780	98%	64	6	A	1,710	1,653	97%	64	13	B
Mohawk Street loop on-ramp to Mohawk Street direct on-ramp	1,305	1,270	97%	62	10	A	2,735	2,620	96%	60	22	C
Mohawk Street direct on-ramp to Westside Parkway on-ramp (end of C-D network)	2,160	2,127	98%	61	14	B	3,780	3,672	97%	59	25	C
		Bottleneck Location										
		Queue										

Table 6-6. Alternative B Mainline Freeway Analysis Summary Results

Freeway Segment	ALT. B AM PEAK						ALT. B PM PEAK					
	Demand (vph)	Served (vph)	%Served	Speed (MPH)	Density (veh/ln/mi)	LOS (HCM 2000)	Demand (vph)	Served (vph)	%Served	Speed (MPH)	Density (veh/ln/mi)	LOS (HCM 2000)
SR-99 NB Mainline												
SR-99 NB south end of the network to White Lane offramp	6,945	6,945	100%	62	28	D	6,695	6,695	100%	62	27	D
White Lane off-ramp to White Lane loop on-ramp	5,865	5,865	100%	61	24	C	5,600	5,558	99%	62	23	C
White Lane loop on-ramp to White Lane direct on-ramp	7,495	7,133	95%	46	39	E	7,230	6,610	91%	51	32	D
White Lane direct on-ramp to Ming Avenue off-ramp	8,200	8,094	99%	58	32	D	7,905	7,433	94%	59	29	D
Ming Avenue off-ramp to C-D (SR 58 WB) off-ramp	7,325	7,325	100%	61	25	C	7,045	6,861	97%	61	23	C
SR 58 WB off-ramp to SR 58 EB off-ramp	6,055	5,970	99%	60	22	C	5,840	5,645	97%	61	21	C
SR 58 EB off-ramp to Ming Avenue on-ramp	4,805	4,784	100%	62	19	C	4,185	4,106	98%	63	16	B
Ming Avenue on-ramp to SR 58 on-ramp	5,755	5,668	98%	60	23	C	4,960	4,828	97%	61	20	C
SR 58 on-ramp to California Avenue off-ramp	6,855	6,855	100%	59	28	D	6,055	5,965	99%	60	24	C
California Avenue off-ramp to California Avenue loop on-ramp	5,755	5,753	100%	62	23	C	5,371	5,191	97%	62	21	C
California Avenue loop on-ramp to California Avenue direct on-ramp	6,815	6,674	98%	56	30	D	6,740	6,024	89%	58	26	C
California Avenue direct on-ramp to Rosedale Highway off-ramp	7,285	6,933	95%	56	29	D	7,650	6,545	86%	54	29	D
Rosedale Highway off-ramp to Buck Owens Boulevard/Sillect Avenue off-ramp	5,545	5,454	98%	61	22	C	6,020	5,283	88%	62	21	C
Buck Owens Boulevard/Sillect Avenue off-ramp to Buck Owens Boulevard/Sillect Avenue on-ramp	4,725	4,646	98%	62	19	C	5,650	4,934	87%	63	20	C
Buck Owens Boulevard/Sillect Avenue on-ramp to Airport Drive off-ramp	5,420	5,271	97%	58	23	C	6,425	5,719	89%	60	24	C
Airport Drive off-ramp to SR 99 NB north end of the network	3,700	3,591	97%	63	14	B	5,020	4,502	90%	62	18	C
SR-99 SB Mainline												
SR 99 SB north end of the network to Airport Drive on-ramp	4,025	4,025	100%	64	16	B	4,740	4,740	100%	63	19	C
Airport Drive on-ramp to Rosedale Highway off-ramp	5,425	5,425	100%	60	22	C	6,825	6,825	100%	56	30	D
Rosedale Highway off-ramp to Rosedale Highway loop on-ramp	4,075	4,075	100%	63	17	B	5,535	5,535	100%	61	23	C
Rosedale Highway loop on-ramp to Rosedale Highway direct on-ramp	5,170	5,170	100%	55	21	C	6,930	6,930	100%	44	35	E
Rosedale Highway direct on-ramp to California Avenue off-ramp	5,825	5,825	100%	57	26	C	8,000	8,000	100%	43	45	F
California Avenue off-ramp to California Avenue on-ramp	4,370	4,370	100%	62	18	B	6,340	6,323	100%	60	26	D
California Avenue on-ramp to SR 58 EB off-ramp	4,905	4,905	100%	61	20	C	7,290	7,175	98%	57	30	D
SR 58 EB off-ramp to Ming Avenue off-ramp	3,990	3,990	100%	62	16	B	5,875	5,796	99%	61	24	C
Ming Avenue off-ramp to SR 58 WB on-ramp	3,150	3,150	100%	63	13	B	4,750	4,750	100%	62	19	C
SR 58 WB on-ramp to Ming Avenue on-ramp	5,760	5,664	98%	62	17	B	7,610	7,551	99%	59	24	C
Ming Avenue on-ramp to White Lane off-ramp	6,535	6,447	99%	59	26	D	8,465	8,044	95%	37	53	F
White Lane off-ramp to White Lane loop on-ramp	4,835	4,752	98%	63	19	C	6,405	6,075	95%	61	25	C
White Lane loop on-ramp to White Lane direct on-ramp	5,075	4,975	98%	62	20	C	6,945	6,550	94%	61	27	D
White Lane direct on-ramp to SR 99 SB south end of the network	5,510	5,243	95%	62	21	C	7,570	6,939	92%	61	28	D
WSP EB Mainline												
WSP west end of the network to West Beltway Off Ramp	2,220	2,220	100%	47	24	C	2,215	2,176	98%	46	24	C
West Beltway Off Ramp to West Beltway Loop On Ramp	1,495	1,468	98%	61	12	B	1,350	1,260	93%	60	10	A
West Beltway Loop On Ramp to West Beltway Direct On Ramp	2,990	2,956	99%	61	16	B	2,680	2,551	95%	61	14	B
West Beltway Direct On Ramp to Allen Rd Off Ramp	3,290	3,233	98%	62	17	B	2,945	2,824	96%	63	15	B
Allen Rd Off Ramp to Allen Rd On Ramp	2,915	2,861	98%	63	15	B	2,645	2,541	96%	63	13	B
Allen Rd On Ramp to Calloway Dr Off Ramp	4,910	4,909	100%	60	27	D	4,495	4,356	97%	61	24	C
Calloway Dr Off Ramp to Calloway Dr Loop On Ramp	3,960	3,940	99%	63	21	C	3,680	3,570	97%	63	19	C
Calloway Dr Loop On Ramp to Calloway Dr Direct On Ramp	4,930	4,821	98%	59	27	D	4,690	4,516	96%	60	25	C
Calloway Dr Direct On Ramp to Coffee Dr Off Ramp	6,055	6,018	99%	60	32	D	5,785	5,677	98%	60	31	D
Coffee Dr Off Ramp to Coffee Dr Loop On Ramp	4,980	4,936	99%	62	26	D	4,910	4,803	98%	62	26	C
Coffee Dr Loop On Ramp to Coffee Dr Direct On Ramp	5,970	5,892	99%	62	24	C	5,960	5,874	99%	61	24	C
Coffee Dr Direct On Ramp to Mohawk St Off Ramp	7,040	6,691	95%	59	28	D	7,075	6,961	98%	58	29	D
Mohawk St Off Ramp to Mohawk St On Ramp	5,220	4,918	94%	60	27	D	5,425	5,379	99%	61	30	D
Mohawk St On Ramp to Truxtun Ave Off Ramp	5,735	5,422	95%	60	24	C	6,515	6,410	98%	57	29	D
Truxtun Ave Off Ramp to SR99 SB C-D Off Ramp(SR99 SB&Ming Ave)	4,135	3,835	93%	62	21	C	5,115	5,020	98%	61	28	D
SR99 SB C-D Off Ramp(SR99 SB&Ming Ave) to H St Off Ramp	2,095	1,934	92%	63	15	B	2,760	2,690	97%	62	22	C
H St Off Ramp to SR 99 NB&SB On Ramp	1,762	1,625	92%	63	13	B	2,393	2,353	98%	62	19	C
SR99 NB&SB On Ramp to Chester Ave On Ramp	3,605	3,487	97%	63	13	B	5,055	4,957	98%	61	18	C
Chester Ave On Ramp to Union Ave Off Ramp	4,600	4,462	97%	61	18	C	6,260	6,160	98%	59	26	D
Union Ave Off Ramp to Union Ave Loop On Ramp	3,580	3,456	97%	63	18	C	5,210	5,088	98%	62	28	D
Union Ave Loop On Ramp to Union Ave Direct On Ramp	3,905	3,705	95%	62	20	C	5,845	5,625	96%	59	32	D
Union Ave Direct On Ramp to Cottonwood Rd Off Ramp	4,235	4,032	95%	62	22	C	6,410	6,242	97%	59	33	D
Cottonwood Rd Off Ramp to Cottonwood Rd On Ramp	3,600	3,413	95%	63	18	C	5,470	5,317	97%	62	29	D
Cottonwood Rd On Ramp to SR58 east end of the network	3,915	3,717	95%	63	20	C	5,765	5,578	97%	61	30	D
WSP WB Mainline												
SR 58 east end of the network to Cottonwood Road off-ramp	5,220	5,220	100%	63	28	D	4,970	4,970	100%	63	26	D
Cottonwood Road off-ramp to Cottonwood Road on-ramp	5,015	5,015	100%	62	27	D	4,675	4,641	99%	62	25	C
Cottonwood Road on-ramp to Brundage Lane off-ramp	5,340	5,340	100%	60	30	D	5,195	5,129	99%	61	28	D
Brundage Lane off-ramp to Brundage Lane on-ramp	4,225	4,225	100%	62	23	C	4,205	4,166	99%	62	22	C
Brundage Lane on-ramp to Union Avenue on-ramp	4,600	4,597	100%	61	25	C	4,560	4,472	98%	61	24	C
Union Avenue on-ramp to Chester Avenue off-ramp	5,180	5,180	100%	61	21	C	5,310	5,267	99%	60	22	C
Chester Avenue off-ramp to H Street on-ramp	4,085	4,085	100%	62	22	C	4,210	4,210	100%	62	23	C
H Street on-ramp to SR 99 NB off-ramp	4,785	4,785	100%	61	20	C	4,925	4,925	100%	61	20	C
SR 99 NB off-ramp to SR 99 SB off-ramp	3,685	3,680	100%	61	20	C	3,830	3,830	100%	61	21	C
SR 99 SB off-ramp to SR 99 NB on-ramp	2,514	2,471	98%	62	20	C	2,610	2,610	100%	62	21	C
SR 99 NB on-ramp to Mohawk Street off-ramp	4,199	4,199	100%	61	23	C	4,355	4,286	98%	61	23	C
Mohawk Street off-ramp to Truxtun Avenue on-ramp	3,319	3,319	100%	61	27	D	3,610	3,585	99%	61	29	D
Truxtun Avenue on-ramp to Mohawk Street loop on-ramp	4,339	4,336	100%	61	24	C	5,475	5,429	99%	60	30	D
Mohawk Street loop on-ramp to Mohawk Street direct ramp	4,994	4,975	100%	62	20	C	6,730	6,629	98%	61	27	D
Mohawk Street direct ramp to Coffee Drive off-ramp	5,784	5,521	95%	61	21	C	7,720	7,230	94%	59	28	D
Coffee Drive off-ramp to Coffee Drive loop on-ramp	3,609	3,518	97%	63	14	B	5,690	5,565	98%	62	22	C
Coffee Drive loop on ramp to Coffee Drive direct on-ramp	3,769	3,657	97%	63	14	B	5,970	5,820	97%	62	23	C
Coffee Drive direct on-ramp to Calloway Drive direct off-ramp	4,094	3,892	95%	63	15	B	6,545	6,360	97%	61	26	C
Calloway Drive direct off-ramp to Calloway Drive loop off-ramp	3,494	3,319	95%	62	13	B	5,620	5,358	95%	61	22	C
Calloway Drive loop off-ramp to Calloway Drive on-ramp	2,734	2,544	93%	63	13	B	4,375	4,166	95%	62	22	C
Calloway Drive on-ramp to Allen Road off-ramp	3,309	3,056	92%	62	16	B	5,390	5,094	95%	59	29	D
Allen Road off-ramp to Allen Road on-ramp	2,184	2,046	94%	64	11	A	3,265	3,119	96%	63	16	B
Allen Road on-ramp to West Beltway off-ramp	2,564	2,396	93%	62	13	B	3,700	3,549	96%	62	19	C
West Beltway off-ramp to West Beltway loop on-ramp	1,079	992	92%	64	8	A	1,510	1,441	95%	64	11	B
West Beltway loop on-ramp to West Beltway direct on-ramp	1,384	1,268	92%	62	10	A	1,960	1,815	93%	61	15	B
West Beltway direct on-ramp to Westside Parkway west end of the network	1,674	1,555	93%	60	13	B	2,320	2,173	94%	58	19	C
State Route 99 NB Collector-Distributor												
SR 99 NB C-D on-ramp to Westside Parkway C-D off-ramp	2,635	2,635	100%	53	17	B	2,520	2,434	97%	53	15	B
State Route 99 SB Collector-Distributor												
Westside Parkway C-D on-ramp to SR 99 SB C-D on-ramp	2,610	2,503	96%	46	18	C	2,860	2,860	100%	46	22	C
Westside Parkway EB Collector-Distributor												
Westside Parkway EB C-D on-ramp to SR 99 SB off-ramp	2,040	1,886	92%	52	15	B	2,355	2,315	98%	52	18	C
SR 99 SB off-ramp to SR 99 SB C-D on-ramp	600	577	96%	47	6	A	715	682	95%	47	7	A
SR 99 SB C-D on-ramp to Ming Avenue	1,440	1,418	98%	48	15	B	1,840	1,705	93%	48	18	B

Bottleneck Location

Queue

Table 6-7. Alternative C Mainline Freeway Analysis Summary Results

Freeway Segment	ALT. C AM PEAK						ALT. C PM PEAK					
	Demand (vph)	Served (vph)	%Served	Speed (MPH)	Density (veh/ln/mi)	LOS (HCM 2000)	Demand (vph)	Served (vph)	%Served	Speed (MPH)	Density (veh/ln/mi)	LOS (HCM 2000)
SR-99 NB Mainline												
SR-99 NB south end of the network to White Ln Off Ramp	7,085	7,085	100%	62	29	D	6,680	6,680	100%	62	27	D
White Ln Off Ramp to White Ln Loop On Ramp	6,000	6,000	100%	61	24	C	5,575	5,524	99%	62	22	C
White Ln Loop On Ramp to White Ln Direct On Ramp	7,650	7,241	95%	45	40	E	7,210	6,578	91%	51	32	D
White Ln Direct On Ramp to Ming Ave Off Ramp	8,350	8,324	100%	58	36	E	7,890	7,598	96%	59	32	D
Ming Ave Off Ramp to Ming Ave On Ramp	7,455	7,455	100%	61	31	D	7,005	6,754	96%	61	28	D
Ming Ave On Ramp to SR58 EB Off Ramp	9,030	9,030	100%	59	31	D	8,525	8,291	97%	59	28	D
SR58 EB Off Ramp to SR99 NB C-D Off Ramp(WSP WB)	7,735	7,303	94%	60	27	D	7,090	6,490	92%	61	24	C
SR99 NB C-D Off Ramp(WSP WB) to California Ave Off Ramp	6,000	5,948	99%	61	24	C	5,220	5,112	98%	62	21	C
California Ave Off Ramp to SR99 NB C-D On Ramp(SR58WB&H St)	4,950	4,933	100%	59	21	C	4,565	4,404	96%	60	18	C
SR99 NB C-D On Ramp(SR58WB&H St) to California Ave Loop On Ramp	6,055	5,986	99%	60	25	C	5,695	5,493	96%	61	23	C
California Ave Loop On Ramp to California Ave Direct On Ramp	6,985	6,688	96%	58	29	D	7,005	6,287	90%	58	27	D
California Ave Direct On Ramp to Rosedale Hwy Off Ramp	7,420	7,057	95%	59	24	C	7,840	6,948	89%	58	24	C
Rosedale Hwy Off Ramp to Buck Owens Blvd/Sillect Ave Off Ramp	5,655	5,349	95%	61	22	C	6,170	5,380	87%	61	22	C
Buck Owens Blvd/Sillect Ave Off Ramp to Buck Owens Blvd/Sillect Ave On Ramp	4,840	4,595	95%	62	18	C	5,795	5,030	87%	62	20	C
Buck Owens Blvd/Sillect Ave On Ramp to Airport Dr Off Ramp	5,515	5,253	95%	59	22	C	6,550	5,747	88%	59	24	C
Airport Dr Off Ramp to SR99 NB north end of the network	3,755	3,518	94%	63	14	B	5,130	4,482	87%	62	18	B
SR-99 SB Mainline												
SR 99 SB north end of the network to Airport Drive on-ramp	3,980	3,980	100%	64	16	B	4,795	4,795	100%	63	19	C
Airport Drive on-ramp to Rosedale Highway off-rRamp	5,390	5,314	99%	60	21	C	6,850	6,850	100%	55	31	D
Rosedale Highway off-ramp to Rosedale Highway loop on-ramp	4,030	4,009	99%	63	16	B	5,550	5,550	100%	60	24	C
Rosedale Highway loop on-ramp to Rosedale Highway direct on-ramp	5,120	5,120	100%	55	20	C	6,920	6,920	100%	43	36	E
Rosedale Highway direct on-ramp to California Avenue off-ramp	5,770	5,770	100%	58	24	C	7,980	7,980	100%	41	48	F
California Avenue off-ramp to California Avenue on-ramp	4,355	4,355	100%	62	18	B	6,355	6,354	100%	60	27	D
California Avenue on-ramp to SR 58 EB off-ramp	4,880	4,880	100%	62	16	B	7,300	7,177	98%	61	24	C
SR58 EB off-ramp to SR 99 SB off-ramp (Ming Avenue)	3,960	3,935	99%	62	16	B	5,910	5,815	98%	61	24	C
SR 99 SB off-ramp (Ming Avenue) to SR 99 SB on-ramp (Westside Parkway EB and SR 58 WB and H Street)	3,160	3,118	99%	63	12	B	4,795	4,763	99%	61	19	C
SR 99 SB on-ramp (Westside Parkway EB and SR 58 WB and H Street) to Ming Avenue on-ramp	5,609	5,509	98%	61	18	B	7,535	7,465	99%	61	24	C
Ming Avenue on-ramp to White Lane off-ramp	6,404	6,284	98%	58	26	C	8,375	8,224	98%	39	55	F
White Lane off-ramp to White Lane loop on-ramp	4,719	4,653	99%	62	19	C	6,355	6,244	98%	61	26	C
White Lane loop on-ramp to White Lane direct on-ramp	4,979	4,766	96%	62	19	C	6,920	6,732	97%	61	28	D
White Lane direct on-ramp to SR 99 SB south end of the network	5,246	5,063	97%	62	20	C	7,333	7,116	97%	61	29	D
WSP EB Mainline												
WSP west end of the network to West Beltway Off Ramp	2,215	2,215	100%	46	25	C	2,210	2,210	100%	46	27	D
West Beltway Off Ramp to West Beltway Loop On Ramp	1,530	1,517	99%	60	13	B	1,360	1,318	97%	60	11	A
West Beltway Loop On Ramp to West Beltway Direct On Ramp	3,005	2,966	99%	61	16	B	2,685	2,608	97%	61	14	B
West Beltway Direct On Ramp to Allen Rd Off Ramp	3,285	3,209	98%	62	17	B	2,940	2,850	97%	63	15	B
Allen Rd Off Ramp to Allen Rd On Ramp	2,925	2,843	97%	63	15	B	2,645	2,547	96%	63	13	B
Allen Rd On Ramp to Calloway Dr Off Ramp	4,915	4,870	99%	60	27	D	4,465	4,383	98%	61	24	C
Calloway Dr Off Ramp to Calloway Dr Loop On Ramp	3,940	3,940	100%	63	21	C	3,640	3,631	100%	63	19	C
Calloway Dr Loop On Ramp to Calloway Dr Direct On Ramp	4,860	4,806	99%	59	27	D	4,605	4,525	98%	59	25	C
Calloway Dr Direct On Ramp to Coffee Dr Off Ramp	5,960	5,960	100%	60	32	D	5,690	5,652	99%	61	30	D
Coffee Dr Off Ramp to Coffee Dr Loop On Ramp	4,910	4,872	99%	62	26	D	4,815	4,815	100%	62	26	C
Coffee Dr Loop On Ramp to Coffee Dr Direct On Ramp	5,860	5,811	99%	62	24	C	5,885	5,885	100%	61	24	C
Coffee Dr Direct On Ramp to Mohawk St Off Ramp	6,935	6,878	99%	55	31	D	6,995	6,995	100%	56	31	D
Mohawk St Off Ramp to Mohawk St On Ramp	5,045	5,009	99%	61	27	D	5,295	5,287	100%	61	29	D
Mohawk St On Ramp to Truxtun Ave Off Ramp	5,520	5,471	99%	60	23	C	6,345	6,279	99%	58	29	D
Truxtun Ave Off Ramp to SR99 SB C-D Off Ramp(SR99 SB&Ming Ave)	3,970	3,899	98%	62	21	C	4,950	4,940	100%	61	27	D
SR99 SB C-D Off Ramp(SR99 SB&Ming Ave) to H St Off Ramp	2,025	1,964	97%	63	16	B	2,605	2,486	95%	63	20	C
H St Off Ramp to Real Rd On Ramp	1,685	1,652	98%	63	13	B	2,248	2,132	95%	63	17	B
Real Rd On Ramp to SR 99 NB&SB On Ramp	2,663	2,560	96%	60	22	C	3,228	2,896	90%	58	25	C
SR99 NB&SB On Ramp to Chester Ave On Ramp	4,535	4,535	100%	62	18	C	5,665	5,332	94%	61	22	C
Chester Ave On Ramp to Union Ave Off Ramp	5,185	5,185	100%	61	21	C	6,580	6,236	95%	59	26	D
Union Ave Off Ramp to Union Ave Loop On Ramp	4,135	4,135	100%	62	22	C	5,215	4,939	95%	62	27	D
Union Ave Loop On Ramp to Union Ave Direct On Ramp	4,435	4,434	100%	62	24	C	5,825	5,471	94%	60	31	D
Union Ave Direct On Ramp to Cottonwood Rd Off Ramp	4,725	4,715	100%	61	26	C	6,375	6,054	95%	59	34	D
Cottonwood Rd Off Ramp to Cottonwood Rd On Ramp	4,080	4,058	99%	62	22	C	5,315	5,014	94%	62	27	D
Cottonwood Rd On Ramp to SR58 east end of the network	4,390	4,344	99%	62	23	C	5,590	5,246	94%	61	29	D
WSP WB Mainline												
SR 58 east end of the network to Cottonwood Road off-ramp	5,245	5,245	100%	63	28	D	5,145	5,145	100%	63	28	D
Cottonwood Road off-ramp to Cottonwood Road on-ramp	5,045	5,017	99%	62	27	D	4,870	4,870	100%	62	26	D
Cottonwood Road on-ramp to Brundage Lane off-ramp	5,420	5,372	99%	61	30	D	5,455	5,394	99%	61	30	D
Brundage Lane off-ramp to Brundage Lane on-ramp	4,595	4,592	100%	61	25	C	4,780	4,705	98%	61	26	C
Brundage Lane on-ramp to Union Avenue on-ramp	5,095	4,984	98%	60	28	D	5,190	5,047	97%	60	28	D
Union Avenue on-ramp to Chester Avenue off-ramp	5,865	5,784	99%	60	24	C	5,900	5,713	97%	59	33	D
Chester Avenue off-ramp to SR 58 WB C-D off-ramp (SR 99 NB and SB and Real Road)	5,040	4,792	95%	59	23	C	5,195	4,847	93%	60	24	C
SR 58 WB C-D off-ramp (SR 99 NB and SB and Real Road) to SR 99 NB C-D on-ramp (SR 99 NB and H Street)	1,785	1,785	100%	63	14	B	1,865	1,826	98%	63	15	B
SR99 NB C-D on-ramp (SR 99 NB and H Street) to Mohawk Street off-ramp	4,171	4,171	100%	59	24	C	4,440	4,290	97%	59	24	C
Mohawk Street off-ramp to Truxtun Avenue on-ramp	3,281	3,266	100%	61	27	D	3,650	3,563	98%	61	29	D
Truxtun Avenue on-ramp to Mohawk Street loop on-ramp	4,281	4,235	99%	61	23	C	5,525	5,432	98%	60	30	D
Mohawk Street loop on-ramp to Mohawk Street direct ramp	4,906	4,853	99%	62	20	C	6,730	6,652	99%	61	27	D
Mohawk Street direct ramp to Coffee Drive off-ramp	5,716	5,378	94%	61	20	C	7,705	7,235	94%	59	28	D
Coffee Drive off-ramp to Coffee Drive loop on-ramp	3,546	3,522	99%	63	14	B	5,595	5,546	99%	62	22	C
Coffee Drive loop on-ramp to Coffee Drive direct on-ramp	3,726	3,656	98%	63	14	B	5,895	5,814	99%	62	23	C
Coffee Drive direct on-ramp to Calloway Drive direct off-ramp	4,036	3,903	97%	63	15	B	6,490	6,351	98%	61	25	C
Calloway Drive direct off-ramp to Calloway Drive loop off-ramp	3,451	3,335	97%	62	13	B	5,540	5,402	98%	61	22	C
Calloway Drive loop off-ramp to Calloway Drive on-ramp	2,726	2,656	97%	63	14	B	4,275	4,162	97%	62	22	C
Calloway Drive on-ramp to Allen Road off-ramp	3,276	3,168	97%	62	17	B	5,330	5,180	97%	59	29	D
Allen Road off-ramp to Allen Road on-ramp	2,136	2,064	97%	64	11	A	3,230	3,179	98%	63	17	B
Allen Road on-ramp to West Beltway off-ramp	2,506	2,419	97%	62	13	B	3,675	3,577	97%	61	19	C
West Beltway off-ramp to West Beltway loop on-ramp	1,021	990	97%	64	8	A	1,455	1,440	99%	64	11	B
West Beltway loop on-ramp to West Beltway direct on-ramp	1,321	1,269	96%	62	10	A	1,930	1,855	96%	61	15	B
West Beltway direct on-ramp to Westside Parkway west end of the network	1,616	1,549	96%	60	13	B	2,305	2,202	96%	57	19	C
State Route 99 NB Collector-Distributor												
SR 99 NB C-D on-ramp to SR 99 NB C-D off-ramp	3,490	3,490	100%	53	22	C	3,705	3,548	96%	52	23	C
State Route 99 SB Collector-Distributor												
SR 58 WB C-D on-ramp to SR 99 SB C-D off-ramp	3,320	3,236	97%	52	21	C	3,675	3,638	99%	52	24	C
SR 99 SB C-D off-ramp to SR 99 SB C-D on-ramp	870	840	97%	49	17	B	935	898	96%	49	18	C
SR 99 SB C-D on-ramp to Ming Avenue off-ramp	1,670	1,664	100%	48	17	B	2,050	1,965	96%	48	20	C
State Route 58 WB Collector-Distributor												
SR 58 WB C-D on-ramp to SR 99 NB C-D off-ramp	3,905	3,793	97%	52	24	C	4,035	3,901	97%	52	25	C
SR 99 NB C-D off-ramp to SR 99 SB off-ramp	2,150	2,120	99%	51	21	C	2,200	2,100	95%	51	20	C
SR 99 SB off-ramp to Real Road off-ramp	775	775	100%	49	8	A	870	870	100%	49	9	A

Bottleneck Location

Queue

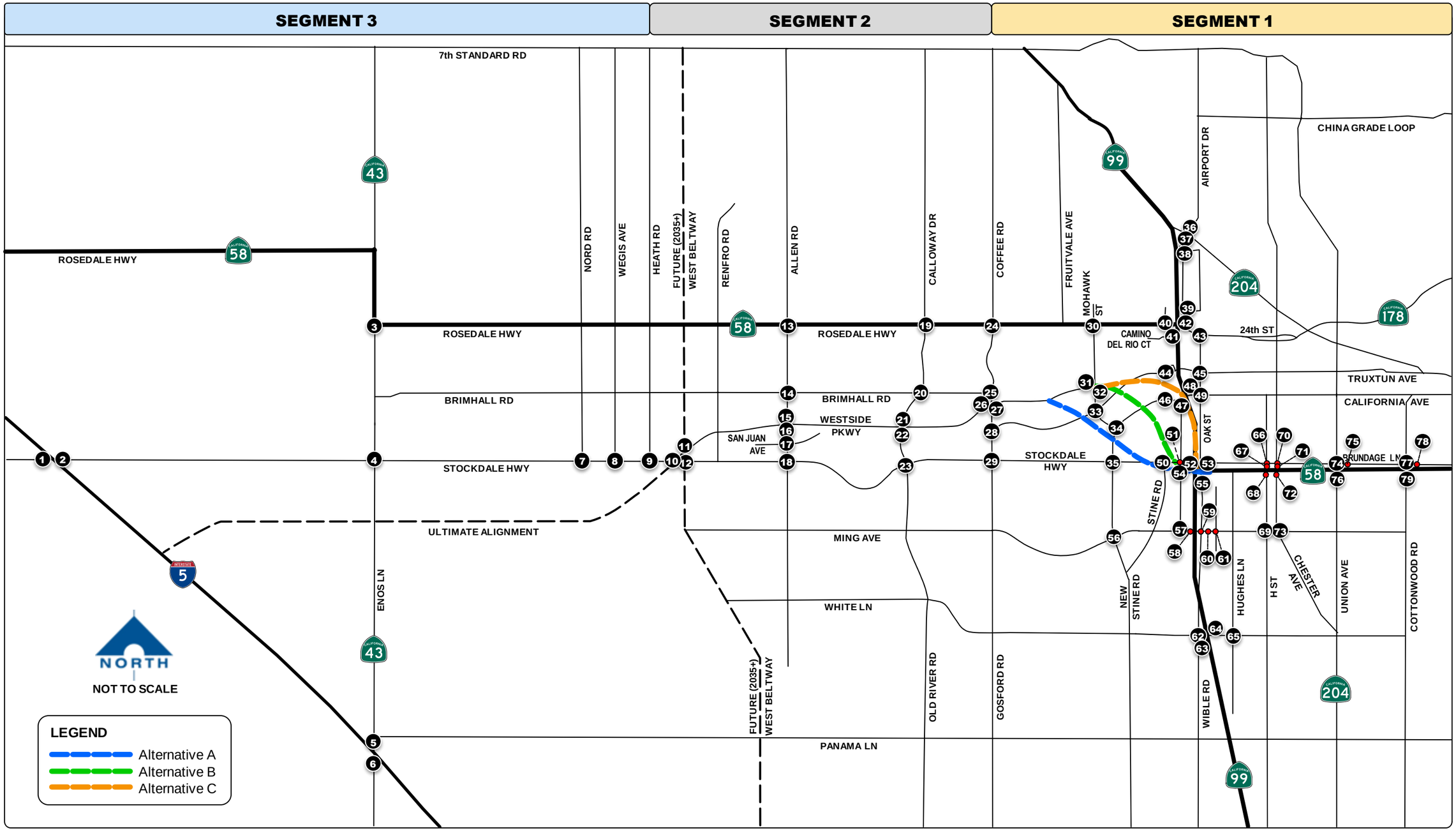


Figure 6-11. Location Map of Study Intersections

Table 6-8. Existing versus Year 2038 Comparison of Intersection Level of Service

Current Int. Number	Intersection	Type of Control	Existing (Source: F&P Associates, Inc Reported Synchro ver. 6 results)				Design Year 2038 No-Build Condition				Design Year 2038 Alternative A				Design Year 2038 Alternative B				Design Year 2038 Alternative C			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1	I-5 SB Ramps/Stockdale Highway	NB/SB TWSC	B	10.2	C	15.1	A	6.4	F	92.0	A	5.3	F	66.3	A	5.7	F	69.0	A	5.4	F	52.1
		Imp-Signal*	N/A				B	12.2	B	11.6	B	11.4	B	11.2	B	11.7	B	11.3	B	11.7	B	11.3
2	I-5 NB Ramps/Stockdale Highway	NB/SB TWSC	A	9.5	B	11.7	A	4.0	B	14.0	A	7.2	B	16.8	A	6.1	B	19.9	A	4.0	B	11.6
3	SR-43 (Enos Lane)/Rosedale Highway	4-way Stop	B	12.0	B	14.9	D	25.8	F	77.0	D	28.5	F	81.9	D	28.4	F	78.7	D	28.1	F	83.1
		Imp-Signal	N/A				N/A				C	26.8	C	32.6	C	26.0	C	32.8	C	26.9	C	33.0
4	SR-43 (Enos Lane)/Stockdale Highway	4-way Stop	B	14.9	D	31.7	F	>150	F	>150	F	>150	F	>150	F	>150	F	>150	F	>150	F	>150
		Imp-Signal*	N/A				C	24.2	C	23.0	B	15.5	C	22.1	B	17.0	C	23.7	B	15.9	C	29.8
5	SR-43 (Enos Lane)/I-5 NB Ramps	EB/WB TWSC	B	11.9	C	15.6	A	3.4	B	10.7	A	4.3	B	10.1	A	3.7	B	14.6	A	3.3	B	13.5
6	SR-43 (Enos Lane)/I-5 SB Ramps	EB/WB TWSC	B	14.5	D	26.9	A	5.7	C	19.8	A	4.1	C	21.2	A	3.9	C	21.9	A	4.6	C	18.1
7	Stockdale Highway/Nord Rd	Signal	N/A				C	31.8	C	29.1	C	34.5	C	32.4	C	31.8	C	28.2	C	34.6	C	22.1
8	Stockdale Highway/Wegis Avenue	NB/SB TWSC	N/A				F	>150	F	>150	F	>150	F	>150	F	>150	F	>150	F	>150	F	>150
		Imp-Signal*	N/A				C	21.5	C	23.2	C	31.3	C	30.7	C	30.9	C	28.6	C	27.7	C	33.0
9	Stockdale Highway/Heath Road	STOP-Existing SIGNAL-Future	C	18.2	C	22.2	C	29.2	C	27.6	C	23.8	C	26.7	C	25.5	C	26.6	C	28.5	C	23.6
10	Stockdale Highway/WSP	Signal	Does not Exist				A	7.6	A	9.0	A	9.0	A	8.3	A	8.4	A	7.8	A	9.5	A	6.4
11	West Beltway/WSP WB Ramp	Signal	Does not Exist				A	6.5	B	14.7	A	8.5	B	17.2	A	7.4	B	19.5	A	9.6	B	16.3
12	West Beltway/WSP EB Ramp	Signal	Doesn't Exist				B	11.2	B	18.2	A	8.3	B	15.3	A	8.8	B	13.7	A	7.9	B	14.2
13	Allen Road/Rosedale Highway	Signal*	D	37.3	E	76.9	D	40.7	D	47.1	D	36.1	D	48.0	D	37.5	D	47.7	D	36.2	D	47.3
14	Allen Road/Brimhall Rd	Signal	C	21.2	B	19.9	C	25.9	C	33.5	C	23.5	C	34.4	C	23.1	C	33.1	C	26.9	C	27.8
15	Allen Road/WSP WB Ramps	Signal	Does not Exist				B	15.0	C	28.0	B	17.5	C	29.3	B	17.2	C	30.1	B	19.3	C	20.5
16	Allen Road/WSP EB Ramps	Signal	Does not Exist				B	10.2	A	3.7	B	10.9	B	11.5	B	10.2	B	12.3	B	17.1	B	13.8
17	Allen Road/San Juan Avenue	Signal*	Does not Exist				C	22.8	C	26.5	C	22.8	C	25.0	C	22.2	C	25.6	C	22.8	C	22.3
18	Allen Road/Stockdale Highway	Signal	D	39.0	C	27.0	C	29.8	C	32.5	C	31.1	C	33.0	C	30.0	C	33.7	C	33.6	C	28.1
19	Calloway Drive/Rosedale Highway	Signal*	E	69.0	F	91.0	D	49.4	D	54.8	E	59.2	E	58.6	E	55.6	E	63.2	E	59.7	E	61.8
20	Calloway Drive/Brimhall Road	Signal	C	31.9	C	25.4	C	29.9	C	28.5	C	29.8	C	35.0	C	34.9	C	33.2	C	31.7	C	31.2
21	Calloway Drive/WSP WB Ramps	Signal	Does not Exist				B	10.8	C	20.5	B	19.2	C	28.3	B	13.1	C	25.6	B	14.2	C	20.2
22	Calloway Drive/WSP EB Ramps	Signal	Does not Exist				B	18.4	A	8.9	B	11.2	A	7.5	B	15.9	A	8.9	B	13.5	A	8.7
23	Calloway Drive/Stockdale Highway	Signal	D	36.1	D	38.5	D	52.3	D	39.7	D	42.9	D	37.0	D	44.9	D	38.2	D	44.0	D	35.9
24	Coffee Road/Rosedale Highway	Signal*	E	75.7	E	65.7	F	83.1	F	98.0	E	79.4	F	97.1	E	67.1	F	134.5	E	69.7	F	110.3
25	Coffee Road/WSP WB Ramp-Brimhall Road	Signal	E	60.1	E	72.7	C	27.3	D	43.2	C	32.0	C	31.6	C	30.9	C	31.9	C	27.6	C	31.1
26	Coffee Road/WSP WB On Ramp	Unsignalized	Does not Exist				N/A				N/A				N/A				N/A			
27	Coffee Road/WSP EB Ramps	Signal	Does not Exist				C	28.7	B	19.0	B	18.2	B	11.0	B	18.1	B	14.3	B	11.1	B	14.1
28	Coffee Road/Truxtun Ave	Signal	E	67.2	F	81.2	C	20.5	C	24.5	B	12.4	B	18.5	B	13.4	B	16.7	B	12.5	B	17.8
29	Coffee Road/Stockdale Hwy	Signal*	F	112.0	F	90.2	E	55.6	F	99.2	E	67.1	F	84.0	E	57.1	F	82.8	E	69.9	F	86.7
30	Mohawk Street/Rosedale Highway	Stop, Existing* Signal, Future*	F	62.4	F	53.2	F	103.6	F	123.2	E	78.8	F	108.2	E	73.1	F	99.5	E	76.8	F	96.7
31	Mohawk Street/WSP WB Ramps	Signal	Does not Exist				n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	B	10.9	A	8.9	B	11.4	A	8.0
32	Mohawk Street/WSP EB Ramps	Signal	Does not Exist				C	24.4	B	19.5	B	11.8	B	13.8	B	18.3	B	12.3	B	18.2	B	14.4
33	Mohawk Street/Truxtun Avenue	Signal	C	29.0	D	41.5	C	31.1	E	59.8	C	26.4	C	25.5	C	33.6	C	28.8	C	33.5	C	29.7
34	Mohawk Street/California Avenue	Signal*	C	30.5	C	34.3	F	105.5	F	175.0	D	37.1	E	70.3	D	40.6	E	62.4	D	35.2	E	65.6
35	Stockdale Hwy/California Avenue	Signal*	E	55.9	F	81.9	F	94.5	F	104.3	D	43.3	E	62.5	D	46.2	E	60.1	D	44.0	E	60.9
36	Airport Drive/State Rd-SR-204 Off	Signal	D	35.9	D	42.5	C	20.2	C	21.9	C	22.2	C	22.6	C	21.9	C	26.7	C	21.5	C	21.9
37	Airport Drive/SR-99 NB Ramp	Signal	A	8.8	C	21.9	A	7.1	B	10.6	A	9.5	B	11.6	A	9.1	B	12.0	A	8.9	B	11.0
38	Buck Owens Boulevard/Rio Mirada Drive	Signal	D	43.7	B	17.8	C	29.1	C	28.6	C	21.7	C	25.0	C	30.9	C	29.4	C	32.6	C	27.5
39	SR99 NB Ramps/Buck-Owens Boulevard	Signal	D	38.9	D	37.5	D	37.5	D	46.2	D	41.7	D	43.4	D	45.3	D	42.3	D	42.4	D	42.6
40	Rosedale Highway/Camino Del Rio Court	Signal	C	28.6	D	37.0	C	20.9	D	49.9	C	30.4	D	49.4	C	33.7	D	45.3	C	32.8	D	46.4
41	Rosedale Highway/SR 99 SB Ramps	Signal	D	41.0	D	44.5	C	22.7	D	37.6	C	21.2	C	21.8	C	20.5	C	20.9	C	20.7	C	22.6
42	Rosedale Highway/SR99 NB Ramps	Signal	D	50.9	F	125.6	C	26.6	C	30.0	C	33.2	D	42.9	C	24.2	D	36.3	C	26.1	D	37.7
43	24th Street/Oak Street	Signal	F	89.4	F	100.3	D	37.5	C	29.5	C	31.3	D	38.4	C	33.2	D	39.0	C	30.4	D	36.9
44	Truxtun Avenue/Empire Drive	Signal*	N/A				C	21.6	D	47.6	C	29.4	D	42.5	C	30.0	D	52.4	c	29.7	D	47.6
45	Truxtun Avenue/Oak Street	Signal	D	43.3	E	74.4	E	61.9	E	73.9	D	52.0	D	46.3	D	52.7	D	45.3	D	51.8	D	48.1
46	California Avenue/Chester Lane	Signal	B	17.5	C	27.8	C	23.7	C	30.1	C	20.2	F	130.7	C	28.7	F	123.6	C	21.1	F	121.3
47	California Avenue/SR99 SB Ramps	Signal	D	48.8	D	44.5	D	54.6	E	76.1	E	57.8	F	90.3	E	60.1	F	83.2	E	58.9	F	83.2
48	California Avenue/SR99 NB Ramps	Signal	E	74.8	C	25.1	C	28.5	D	51.5	C	32.5	C	25.9	C	28.1	C	21.2	C	30.7	C	24.5
49	California Avenue/Oak St	Signal	D	44.1	E	78.7	C	28.3	E	61.5	C	29.7	E	58.6	C	27.5	E	57.9	C	28.2	E	58.1
50	Stockdale Highway/Stine Road	Signal *	N/A				F	90.7	F	>150	D	36.1	F	90.0	D	38.7	F	83.8	D	35.9	F	94.0
51	Stockdale Highway/Real Road	Signal	F	95.8	F	93.2	D	48.3	F	94.0	D	36.0	D	53.1	D	42.8	D	50.7	D	45.2	F	91.3
52	Stockdale Highway/SR99 SB Ramp	Signal	B	12.2	B	10.5	B	16.8	B	18.0	***Intersection does not exist in Alternative***											
53	Brundage Lane/Oak Street	Signal	C	28.9	D	38.8	C	31.9	D	40.3	C	25.9	C	30.4	C	25.3	C	31.4	C	29.9	C	30.6
54	Real Road/SR58	Signal	C	27.0	C	27.3	C	21.8	D	39.3	***Intersection does not exist in Alternative***								C	21.1	D	39.9
55	Wible Road/SR99 NB Ramps	Signal	B	17.9	C	32.2	B	15.5	C	28.4	***Intersection does not exist in Alternative***											
56	Ming Avenue/New Stine	Signal*	E	56.5	E	79.6	E	57.2	E	70.3	D	42.1	D	44.4	D	48.0	D	44.6	D	44.4	D	44.0
57	Ming Avenue/Real Road	Signal	C	25.4	E	60.8	C	25.3	E	64.5	C	30.6	C	29.9	C	30.5	C	30.6	C	25.7	C	28.4
58	Ming Avenue/SR99 SB Ramps	Signal	A	3.4	C	29.3	A	3.2	B	15.6	A	8.8	B	15.7	A	7.9	B	15.2	A	4.9	B	15.8
59	Ming Avenue/Wible Road	Signal	E	61.3	E	68.1	C	23.2	C	24.5	C	25.8	C	28.2	C	26.3	C	24.1	C	28.1	C	27.4
60	Ming Avenue/SR99 NB Ramps	Signal	C	26.7	D	40.4	D	36.4	C	28.3	C	25.1	C	33.6	C	27.8	C	34.3	C	33.8	C	34.5
61	Ming Avenue/Castro Lane	Signal	B	16.7	C	24.7	C	25.3	D	38.9	C	30.1	D	39.8	C	28.9	D	36.8	C	28.6	D	35.9
62	White Lane/Wible Road	Signal*	D	54.7	F	83.3	E	70.3	F	115.6	E	72.6	F	115.8	E	71.7	F	118.3	E	69.9	F	114.0
63	White Lane/SR99 SB Ramps	Signal*	C	22.3	F	109.5	C	24.9	F	106.2	C	25.1	F	98.5	C	23.4	F	105.5	C	24.3	F	105.3
64	White Lane/SR99 NB Ramps	Signal*	A	5.4	A	6.9	A	9.6	B	15.5	B	10.2	B	15.6	B	10.8	B	15.7	B	10.2	B	16.9
65	White Lane/Hughes Lane	Signal*	D	35.9	D	38.3	D	42.1	C	29.5	D	36.1	D	36.2	D	35.7	D	39.4	D	37.2	D	38.9
66	H Street/Brundage Lane	Signal	C	20.7	D	35.3	C	29.2	E	68.0	C	26.2	D	53.8	C	26.9	D	47.9	C	24.9	C	25.8
67	H Street/SR58 WB Ramp	Signal	B	17.1	E	56.3	C	20.6	E	64.3	B	15.7	D	35.1	B	13.5	D	36.0	B	14.7	D	35.9
68	H Street/SR58 EB Ramp	Signal	D	41.1	C	27.2	D	40.0	C	29.0	C	23.2	C	25.7	C	24.7	C	27.5	C	24.6	C	26.2
69	H Street/Ming Ave	Signal*	C	29.6	D	35.5	D	36.0	D	47.5	D	36.6	D	44.1	D	37.9	D	40.9	D	37.2	D	43.2
70	Chester Avenue/Brundage Lane	Signal	C	21.0	C	30.7	C	23.2	E	68.0	C	26.2	D	53.8	C	26.9	D	47.9	C	24.9	C	25.8
71	Chester Avenue/SR58 WB off Ramp	Signal	B	18.0	C	23.9	C	26.0	C	28.5	C	23.9	C	27.2	C	20.6	C	27.5	C	20.7	C	28.1
72	Chester Avenue/SR58 EB on Ramp	Signal	C	28.9	C	22.2	C	30.7	C	25.7	C	29.9	C	31.1	C	28.6	C	29.1	C	27.7	C	21.8
73	Chester Avenue/Ming Ave	Signal*	C	23.7	C	24.0	D	35.1	D	47.6	D	42.2	D	50.0	D	39.5	D	52.7	D	40.0	D	51.2
74	Union Avenue/Brundage Lane	Signal	D	42.1	D	39.6	D	46.8	D	43.4	D	42.7	D	47.8	D	45.6	D	49.4	D	44.6	D	51.0
75	Brundage Lane/SR58 WB Ramps	Signal	B	19.7	B	15.1	C	23.4	D	41.0	C	24.8	D	41.8	C	23.6	D	43.4	C	25.1	D	42.6
76	Union Avenue/SR58 EB Ramps	Signal	B	16.2	B	10.9	B	18.0	B	15.8	B	19.9	B	18.9	B	19.8	B	20.0	B	19.7	B	18.5
77	Cottonwood-MLK/Brundage Lane	Signal	N/A				C	28.8	C	27.5	C	25.2	C	27.6	C	23.6	C	28.9	C	23.9	C	25.2
78	Cottonwood-Brundage/SR 58 WB Ramps	Signal	N/A				C	27.3	C	32.9	C	23.3	C	33.1	C	21.2	C	30.3	C	20.2	C	33.9
79	Cottonwood/SR 58 EB Ramps	Signal	N/A				B	15.8	B	15.7	B	11.0	B	18.8	B	10.7	B	19.6	B	12.1	B	17.4

Intersection* LOS Summary based on Synchro 6
TWSC Two-Way Stop Control
N/A Existing counts not available
LOS E Conditions
LOS F Conditions
Source: Existing LOS Calculation are done Fehr & Peers Associates Inc and Future LOS Calculation are done by Parsons

personnel will be necessary to ensure quick response times. Disruptions in access to local schools are expected to be very minimal, with safe and efficient alternatives to currently used routes readily available.

Local roadway and freeway access modifications and their ramifications for local circulation, emergency and health services provision, and the location of schools for each of the build alternatives are summarized below. Figure 6-12 illustrates the general study area, depicting the locations where access modifications will be required. It should be noted that a portion of the affected areas east of Oleander Drive and south of Belle Terrace are not visible on this map, but the streets involved are discussed below. The location and proposed treatment of each affected local street can be seen in layout drawings provided in the full body of the *Centennial Corridor Traffic Study* report.

Alternative A—Street Closures and General Circulation

NORTH OF STATE ROUTE 58

On the north side of State Route 58, the following existing through streets will be terminated or converted to cul-de-sacs just north of the proposed right-of-way:

- Jones Street
- Williamson Way
- McDonald Way
- Business Park South

Jones Street will be closed both south of Stockdale Highway and north of Peckham Avenue. Nearby north–south access is available at Stine Road. Williamson Way will be also closed south of the proposed roadway. Nearby north–south access is available at Real Road. Existing north–south traffic on McDonald Way will be diverted to Cunan Street to the east and South Montclair Street to the west. Business Park South will be shortened to the north to accommodate the roadway project and traffic will be diverted to adjacent Business Center Drive.

SOUTH OF STATE ROUTE 58

On the south side of State Route 58, the following existing through streets will be terminated or converted to a cul-de-sac just south of the proposed right-of-way:

- Jones Street
- South Gamsey Avenue
- Williamson Way
- Myrtle Street
- Dixon Avenue
- Frazier Avenue
- Westwood Street
- McDonald Way
- Brite Street
- South Oleander Avenue
- Houchin Road

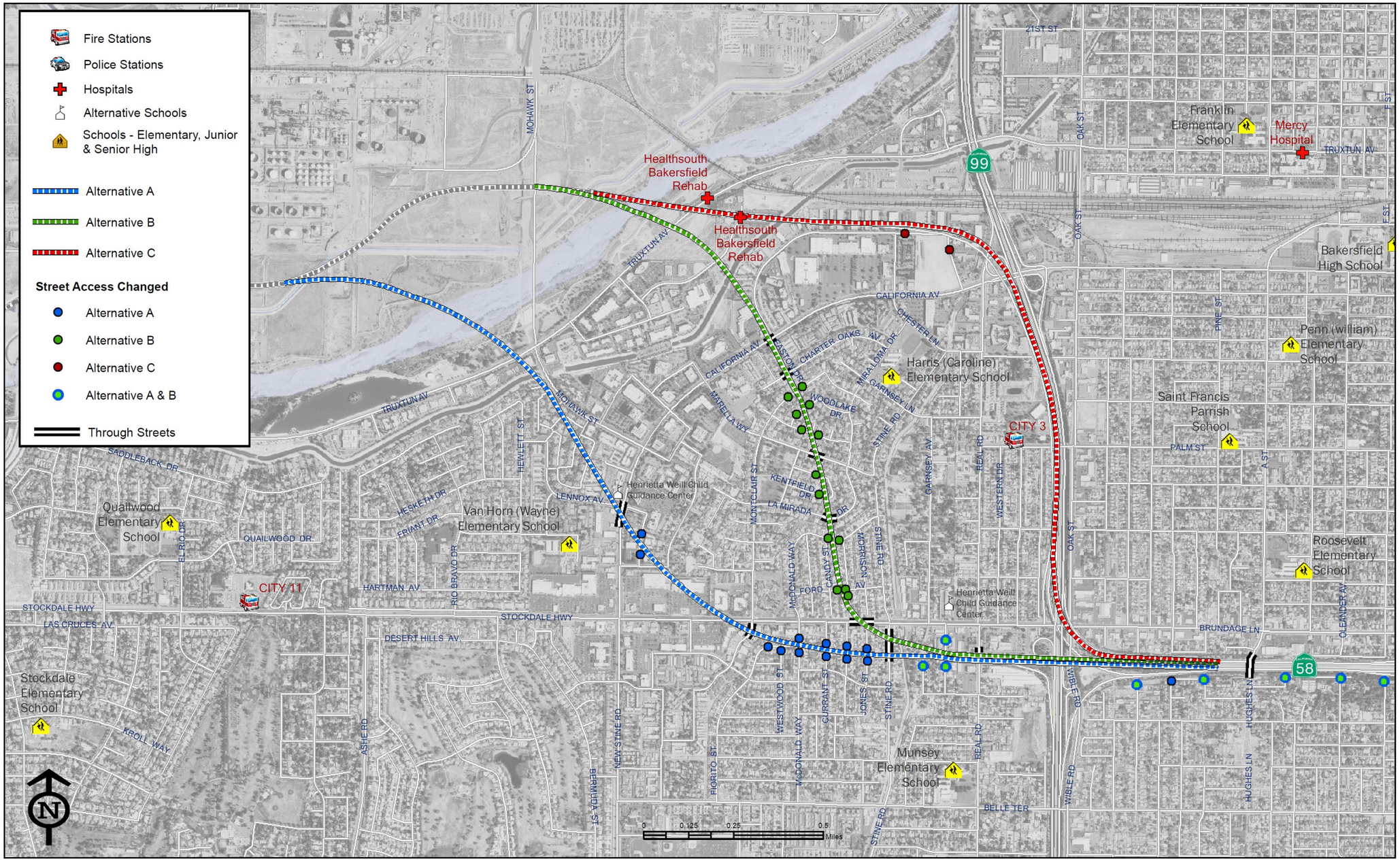


Figure 6-12. Local Roadway Access Modifications

Stine Road will continue as a through street, forming an underpass at the proposed roadway. Real Road will form a traffic-divided underpass of the mainline, in addition to the eastbound on-ramps and westbound off-ramps of the proposed highway. South Gamsey Avenue is an existing cul-de-sac which will be shortened to accommodate the roadway right-of-way. Myrtle Street and Dixon Avenue are currently linked at their northern termini by a connecting street. The street will be eliminated and converted to a cul-de-sac to accommodate the proposed roadway. Both streets will be minimally affected in terms of circulation due to nearby Hughes Lane, which will continue as a major through street. Frazier Avenue and Westwood Street will be terminated but the connecting street between the two will be retained. McDonald Way will be terminated and traffic diverted east to become Peckham Avenue. North–south traffic will be served by South Montclair Street to the east and Stine Road to the west. Brite Street, an east–west street, will be terminated and the connecting road between Brite Street and South Oleander Avenue eliminated. The existing Houchin Road cul-de-sac will be moved slightly to the south to accommodate the proposed roadway. North–south traffic will still access H Street as currently used.

WEST OF STATE ROUTE 99
On the west side of State Route 99, the following existing streets will be terminated just west of State Route 99:

- Wood Lane
- Laverne Avenue

Eastbound traffic on Wood Lane and Laverne Avenue has access to Belle Terrace or Ming Avenue, streets in close proximity which provide through movements east of State Route 99. Seville Street will be extended north, just past Laverne Avenue, to serve existing properties. A frontage road connection between Mona Way and Belle Terrace will be established. Belle Terrace will form an underpass of State Route 99. Affects on circulation in this area will be very limited.

Alternative B—Street Closures and General Circulation

NORTH OF STATE ROUTE 58
On the north side of State Route 58, the following existing through streets will be terminated just north of the proposed right-of-way:

- Kentfield Drive
- Hillsborough Drive

Southbound traffic on Kentfield Drive and Hillsborough Drive will be diverted a short distance east or west to Marella Way or La Mirada Drive, both of which provide through movements via underpasses of the proposed roadway.

SOUTH OF STATE ROUTE 58
On the south side of State Route 58, the following existing through streets will be terminated or converted to a cul-de-sac just south of the proposed right-of-way:

- South Myrtle Street
- South Gamsey Avenue

- Kensington Avenue
- Woodlake Drive
- Montclair Street
- Charter Oaks Avenue
- Dixon Avenue
- Brite Street
- South Oleander Avenue
- Houchin Road

Stine Road and Williamson Way, one street on either side of South Gamsey Avenue, will remain as north–south through streets and retain easy access north to Stockdale Highway. Real Road will remain as a major north–south divided collector roadway. Northbound traffic on Kensington Avenue, Woodlake Drive, Montclair Street, and Charter Oaks Avenue will be diverted either east or west to California Avenue or either Marella Way or La Mirada Drive, respectively. California Avenue will remain as a major north–south divided arterial roadway. Brite Street, an east–west street, will be terminated and the connecting road between Brite Street and South Oleander Avenue eliminated. Northbound traffic on Dixon Avenue will be directed one block east to Hughes Lane. Northbound traffic on South Oleander Avenue and Houchin Road will be diverted to H Street, one and two blocks to the east, respectively. Hughes Lane, H Street, Chester Avenue, and South P Street will remain as north–south arterial roadways serving the City of Bakersfield.

WEST OF STATE ROUTE 99
On the west side of State Route 99, the following existing through streets will be terminated just west of State Route 99:

- Wood Lane
- Laverne Avenue

Seville Street will be extended north just past Laverne Avenue to serve existing properties. A frontage road connection between Mona Way and Belle Terrace will be established. Belle Terrace will form an overpass of State Route 99. The existing Wood Lane cul-de-sac will be moved slightly to the west. North–south through access will remain at Belle Terrace.

Alternative C—Street Closures and General Circulation

WEST OF STATE ROUTE 99
On the west side of State Route 99, the following existing streets will be terminated just west of State Route 99:

- Chester Lane
- Elcia Drive
- Terrace Way
- Wood Lane

Chester Lane currently forms a cul-de-sac at its eastern-most terminus, just west of State Route 99. Traffic circulation will not be affected as the two streets on either side of Chester Lane

(California Avenue and Palm Street) provide east–west through access. Elicia Drive and Terrace Way, two adjacent and parallel streets will be connected just west of State Route 99 to provide circulation for adjacent properties. A frontage road connection between Mona Way and Belle Terrace will be established. Belle Terrace will form an overpass of State Route 99. The existing cul-de-sac on Wood Lane will be moved slightly to the west. North–south through access will remain at Belle Terrace.

SOUTH OF STATE ROUTE 58
On the south side of State Route 58, an existing street, Commerce Drive, will be converted to a cul-de-sac just south of the proposed right-of-way. Commerce Drive currently ends in a cul-de-sac south of Truxtun Avenue. Commerce Drive will be terminated farther to the south in order to accommodate the proposed roadway right-of-way, but neither circulation nor access is affected.

Emergency Service Access

In the case of alternative A, one health care center (HealthSouth Bakersfield Rehab) and two fire stations (City 3 and City 11) are located within the immediate vicinity of the proposed right-of way. In the case of alternatives B and C, one health care center (HealthSouth Bakersfield Rehab) and one fire station (City 3) are located within the immediate vicinity of the proposed right-of-way.

In each case, the expected change as a result of the proposed project in existing local circulation patterns will be minimal and will not unduly affect traffic or the provision of local emergency services. Service provision from the closest police station, Bakersfield Central Receiving Station at 1415 Truxtun Avenue, is not expected to be affected.

Access to Schools

Two schools, Van Horn Elementary and Henrietta Well Child Guidance Center are in the immediate vicinity of the alternative A right-of-way. Two schools, Harris Elementary and Henrietta Well Child Guidance Center, are in the immediate vicinity of the alternative B right-of-way. In each case, at least some students will be forced to access the school via a nearby local alternative to the route currently used. Because the actual closures of streets are minimal and the opportunities for alternate access readily available, however, situations are not expected in which functional access to any of these facility would be materially affected.

Based on the location of schools in the vicinity of alternative C construction, no changes in access for students are expected.

6.9 Freeway Access Modifications

Modifications to existing access ramps along State Route 99 and State Route 58 are required as part of the project and will impact travel access. Impacts will differ in degree depending on the alternative and location examined.

Freeway access modifications resulting from the proposed project are not expected to impact the provision of public safety services, such as fire or police, or affect access to health care facilities. Minor re-routing adjustments with respect to call response and patrol duties for fire and police

personnel will be necessary to ensure quick response times. Disruptions in access to local schools are expected to be very minimal, with safe and efficient alternatives to currently used routes readily available.

Freeway access modifications and their ramifications for local circulation and alternative travel route recommendations are summarized below:

- The southbound State Route 99 off-ramp with direct access to Stockdale Highway will be eliminated under **alternatives A, B and C**. The provided alternative will be for vehicles to exit instead at the California Avenue interchange, just to the north. California Avenue and Oak Street provide a direct connection with the Stockdale Highway corridor.

- The northbound State Route 99 exit and entrance access points to and from Wible Road will be eliminated under **alternatives A, B and C**. Under existing and no-build conditions, these ramps provide access to and from the Stockdale Highway corridor. The provided alternative will be for vehicles to utilize either the California Avenue interchange to the north or the Ming Avenue interchange to the south, depending upon their destination.

- Access from Real Road and the Stockdale Highway corridor to southbound State Route 99 will be eliminated under **alternatives A, B and C.** The available alternative will be for drivers to utilize Real Road or Stine Road to access southbound State Route 99 via the Ming Avenue interchange.

- The connection between westbound State Route 58 to Real Road and the Stockdale Highway corridor will be eliminated under **alternatives A and B**, only. The likely alternative is for drivers to utilize the H Street/Chester Avenue interchange. The next nearest intersection to the north would be Calloway Drive in the case of alternative A, and Mohawk Street in the case of alternative B.

- Ming Avenue corridor access to and from State Route 58, east of State Route 99, will be eliminated under **alternatives A and B**, only. The area is characterized by relatively heavy traffic associated with movements to and from the Valley Plaza Mall and other nearby retail businesses. The provided alternative will be for vehicles to utilize the Chester Avenue interchange.

- Access from westbound State Route 58 to California Avenue via State Route 99 will be eliminated under **alternative C,** only. Drivers will instead be required to utilize Chester Avenue or H Street to access California Avenue to the north.

6.10 Future Projects and Interim Conditions

The future year transportation networks assume a large number of highway and transit elements listed in the 2011 Regional Transportation Plan (Amendment 1) which are "constrained" by funding that is currently available or reasonably projected to be available by the opening (2018) and design year (2038) analysis scenarios. In addition to these constrained projects, two "unconstrained" (unfunded) projects have been considered by this traffic study:

1. The construction of Segment 3 of the Centennial Corridor from the west end of the Westside Parkway to Interstate 5
2. The construction of Segment 1 freeway-to-freeway connector ramps between State Route 58 (west) and State Route 99 north.

These future projects and interim conditions are discussed below.

Segment 3—Heath Road to Interstate 5

The limits of Segment 3 were previously illustrated on Figure 6-7. The ultimate alignment is proposed as a new 7.4-mile-long freeway that would follow an east–west alignment parallel to the Cross Valley Canal. The route would be about one-third mile south of Stockdale Highway from Heath Road to about 1.2 miles west of State Route 43. The alignment would continue to follow the canal in a southwest direction and connect to Interstate 5 at a new freeway-to-freeway interchange located two miles south of the Stockdale Highway/Interstate 5 interchange. Segment 3 was evaluated in the approved *Route 58 Route Adoption Project, A Tier I Environmental Impact Statement/ Environmental Impact Report* (Caltrans, 2001). A Tier I document shows a general alignment and identifies impacts at a conceptual level and is done when there is not full funding for the improvements. An alignment known as the Cross Valley Canal alignment was identified as the "least environmentally damaging practicable alternative." Segment 3 will remain at the Tier I, route-adoption level of analysis until there is sufficient funding for construction. At that time, a project-level environmental document will be prepared.

In the interim, Stockdale Highway, from the Westside Parkway to Interstate 5, would be temporarily adopted as State Route 58, under build alternatives A, B and C. Under the no-build and transportation system management alternatives, State Route 58 would remain on its currently alignment. With build alternatives A, B, and C, improvements would be required at the Stockdale Highway and State Route 43 (Enos Lane) intersection. The proposed improvements would widen the intersection and add signals to control the traffic movements. Enos Lane would be widened to add a dedicated left-turn lane and a shared through/right-turn lane in both directions. Though physically located in Segment 3, these improvements would be built as part of segment 1 to ensure adequate traffic operations at this intersection.

In addition to these project related improvements at Stockdale Highway and Enos Lane, land developer improvements are assumed under no-build and build alternatives A, B, and C as a condition of entitlement. These land development conditions of approval call for the widening of Stockdale Highway to four lanes from Nord Road to Enos Lane and the installation of traffic signals and intersection improvements at Stockdale Highway and Wegis Avenue and at Stockdale Highway and Nord Road. These intersection improvements and lane additions are assumed under all year 2038 no-build and build analysis scenarios.

In addition to local street intersections, the traffic analysis examined traffic operations at the two off-ramp termini intersections of Stockdale Highway and Interstate 5. The analysis results indicated that by year 2038, a traffic signal would need to be installed at the Interstate 5 southbound off-ramp to Stockdale Highway. This traffic signal installation is needed for all no-build and build project scenarios for year 2038 projected traffic volumes. A signalized intersection is not needed to address opening year 2018 conditions.

The Federal Highway Administration's August 2010 *Interstate System Access Informational Guide* indicates that improvements to traffic control at ramp termini with local roads should be reviewed to ensure that the changes in traffic control (i.e., signalization) do not result in queue spillback into the mainline lanes of the interstate facility and that sufficient storage is provided. This review has been undertaken and no spillback to the mainline will occur given the installation of a traffic signal at the southbound off-ramp termini when traffic volumes warrant.

It should be noted that construction of a new freeway segment from Heath Road to Interstate 5 will likely negate the need for a traffic signal installation at the southbound off-ramp to Stockdale Highway. As this traffic signal is not needed for opening year project conditions, and may never be needed under future conditions, this traffic operational analysis recommends that coordination with FHWA's Division Office be deferred until such time that traffic volumes and queue lengths approach or meet traffic signal warrants.

With the installation of traffic signals at the intersections identified above, Stockdale Highway will operate at level of service C or better conditions at all segment 3 study intersections.

In addition to intersection analysis, highway segment analysis was conducted for the two segments lying east and west of State Route 43 which are unsignalized (uninterrupted flow) for a distance of two or more miles:

1. Interstate 5 to State Route 43
2. State Route 43 to Nord Road

The results of the highway segment analysis indicate that Stockdale Highway operates, and will continue to operate, below Caltrans (District 6) level of service threshold of the transition between LOS C and LOS D for rural roads (Stockdale Highway west of Enos Lane) or the transition between LOS D and LOS E for urban roads (Stockdale Highway east of Enos Lane).

State Route 58/State Route 99 Interim Connections

The build alternatives A, B, and C do not provide direct connector ramps to or from the north on State Route 99 as part of the Centennial Corridor project. The preliminary plans allow for these ramps to be constructed a future date. Interim access will be provided by the State Route 99 interchange with existing State Route 58 (west), connecting to the Westside Parkway via Mohawk Street.

Figure 6-13 illustrates the interim route connection between the Westside Parkway and State Route 99, to and from the north. The route covers 2.1 miles from the State Route 99/Rosedale Highway undercrossing to the Westside Parkway/Mohawk Street overcrossing.

A southbound State Route 99 to westbound Westside Parkway motorist following the interim connecting route would pass through seven signalized intersections; while an eastbound to northbound motorist would pass through 10 signalized intersections.

Figure 6-13: Interim Connection between Westside Parkway and State Route 99

The year 2038 level of service computed for these intersections is LOS D or better except at the intersection of Mohawk Street and Rosedale Highway where LOS E and F conditions are forecast for year 2038.

Insofar as the build alternatives, providing direct connector ramps to/from the north on State Route 99 would lengthen the route traveled, but this journey would occur at a higher rate of speed. The relative change in distance and travel time is as follows:

Comparative Distance and Travel Time from Westside Parkway to/from State Route 99 North

	LENGTH (miles)*	DELTA	
		MILES	TIME (min)**
Interim route	2.6	0	0
Alternative A (with future ramps)	4.5	+1.9	0 to –5
Alternative B (with future ramps)	4.9	+2.3	0 to –5
Alternative C (with future ramps)	2.7	+0.1	–2 to –7

*State Route 99/Rosedale Highway undercrossing to 0.55 miles west of Westside Parkway/Mohawk Street overcrossing.
**Change in travel time during off-peak and peak hours.

Based on this assessment of motorist delay and increased vehicle miles traveled, direct connector ramps from Westside Parkway to/from State Route 99 (north) will be deferred until sometime following year 2038, or when demand and traffic operating conditions along the interim route warrant.

Independent Utility and Logical Termini

Federal Highway Administration regulations (23 Code of Federal Regulations 771.111[f]) require that (1) projects have logical limits and be long enough that the environmental analysis has a broad scope; (2) projects are usable and a reasonable use of funds, even if no additional transportation improvements in the area are made (this is known as independent utility); and (3) approval of a project does not restrict consideration of alternatives for other reasonably foreseeable transportation improvements. As discussed below, the Centennial Corridor project build alternatives A, B, and C comply with these requirements.

Both the ultimate project (construction of all three roadway segments) and phased project (construction by segment) have logical limits. The ultimate project would provide a freeway facility that connects State Route 58 with State Route 99 and Interstate 5 at freeway-to-freeway interchanges. The segment 1 project would close a gap by connecting State Route 58 (east) with the new Westside Parkway (segment 2).The connecting ramps from State Route 58 (west) to and from State Route 99 (south) would be constructed as part of the Centennial Corridor project. Connecting ramps from State Route 58 (west) to and from State Route 99 (north) would be constructed at a later date. Insofar are the connection to Interstate 5, segments 1 and 2 and Stockdale Highway would serve the developed portion of metropolitan Bakersfield by moving traffic, goods, and freight through the area, and would provide access to Interstate 5 for improved regional access. The ultimate segment 3 freeway facility would connect Interstate 5 with the west

end of the Westside Parkway at the point in time when the travel demand exceeds the capacity of Stockdale Highway (a two-lane roadway). Identifying segment 3 as a future alignment for State Route 58 will allow preservation of an adequate transportation corridor in the future. Combined with the existing State Route 58 (east), the project would provide a high capacity, high level of service, east–west facility in the San Joaquin Valley.

Another important consideration is whether the project is of sufficient length to address traffic and environmental related matters on a broad scope. At 17.4 to 18.5 miles long (depending on the alternative), the study corridor extends well beyond the proposed construction limits. This ensures that the traffic issues that would be addressed in detail if construction of segment 3 and the State Route 58 (west)/State Route 99 (north) direct connector ramps, as proposed in the future, are considered at a Tier I planning level now.

The project's phased implementation would provide an effective and efficient roadway even if no additional transportation improvements are made as the connection of segment 1 and segment 2 would provide an adequate traffic level of service through 2038 (the project's design year). Finally, there are no other projects that would be needed or are dependent on construction of the Centennial Corridor project.

APPENDIX A

LOCAL TRAFFIC IMPACTS
for the
CENTENNIAL CORRIDOR PROJECT

Build Alternative B

INTRODUCTION

The Centennial Corridor Project Final Traffic Study Report, dated November 2012, addresses local roadway access modifications in section 4.8 of the report. The analysis presented in this document is intended to supplement the information reported in section 4.8 regarding build Alternative B.

The alignment of build Alternative B traverses the central portion of the Westpark neighborhood, as illustrated on Figure 1. The Westpark neighborhood (also known as West Park) is generally bound by California Avenue on the north and west, Stockdale Highway on the south, and State Route 99 on the east. The neighborhood is named after one of its prominent parks.

While the area bisected by Alternative B is collectively known as Westpark, a number of physical features divide the area into three, if not four, sub-neighborhoods. Foremost among the physical barriers is the Stine Canal. This canal runs in a north–south direction from north of California Avenue to south of Stockdale Highway. Only two local streets within the Westpark neighborhood cross the Stine Canal. For all practical purposes, this canal divides the neighborhood into the east of Stine Canal and west of Stine Canal sub-neighborhoods. **Local traffic circulation within the east of Stine Canal sub-neighborhood is not affected by the Centennial project build Alternative B.**

The remainder of this local circulation investigation therefore focuses on the portion of Westpark located to the west of the Stine Canal.

Supplementary traffic studies have not been conducted for build alternatives A and C because the alignments for these two options traverse the edges of residential neighborhoods, whereas Alternative B passes through the center of a neighborhood, that being Westpark.

ALTERNATIVE B ALIGNMENT AND NEIGHBORHOOD ACCESS

Figure 2 illustrates the alignment of Alternative B as it traverses the Westpark neighborhood. Commercial properties line both sides of California Avenue; thus, this investigation focuses on local circulation impacts to Westpark residents who live to the south and east of California Avenue, and west of the Stine Canal, as noted above.

The neighborhood is served by a hierarchy of roadways. California Avenue and Stockdale Highway, and Oak Street just east of State Route 99 are classified as *arterial* streets. Arterials serve longer distance trips, generally one to five miles in length and provide access to commercial land uses. None of the arterial streets surrounding the Westpark neighborhood are disrupted by the alignment of build Alternative B.

The vertical alignment of the freeway is designed to cross over Stockdale Highway on a bridge. Once over Stockdale Highway, the freeway will begin to descend to below grade, so that it will pass under La Mirada Drive and Marella Way. The freeway will then ascend in order to pass over California Avenue.

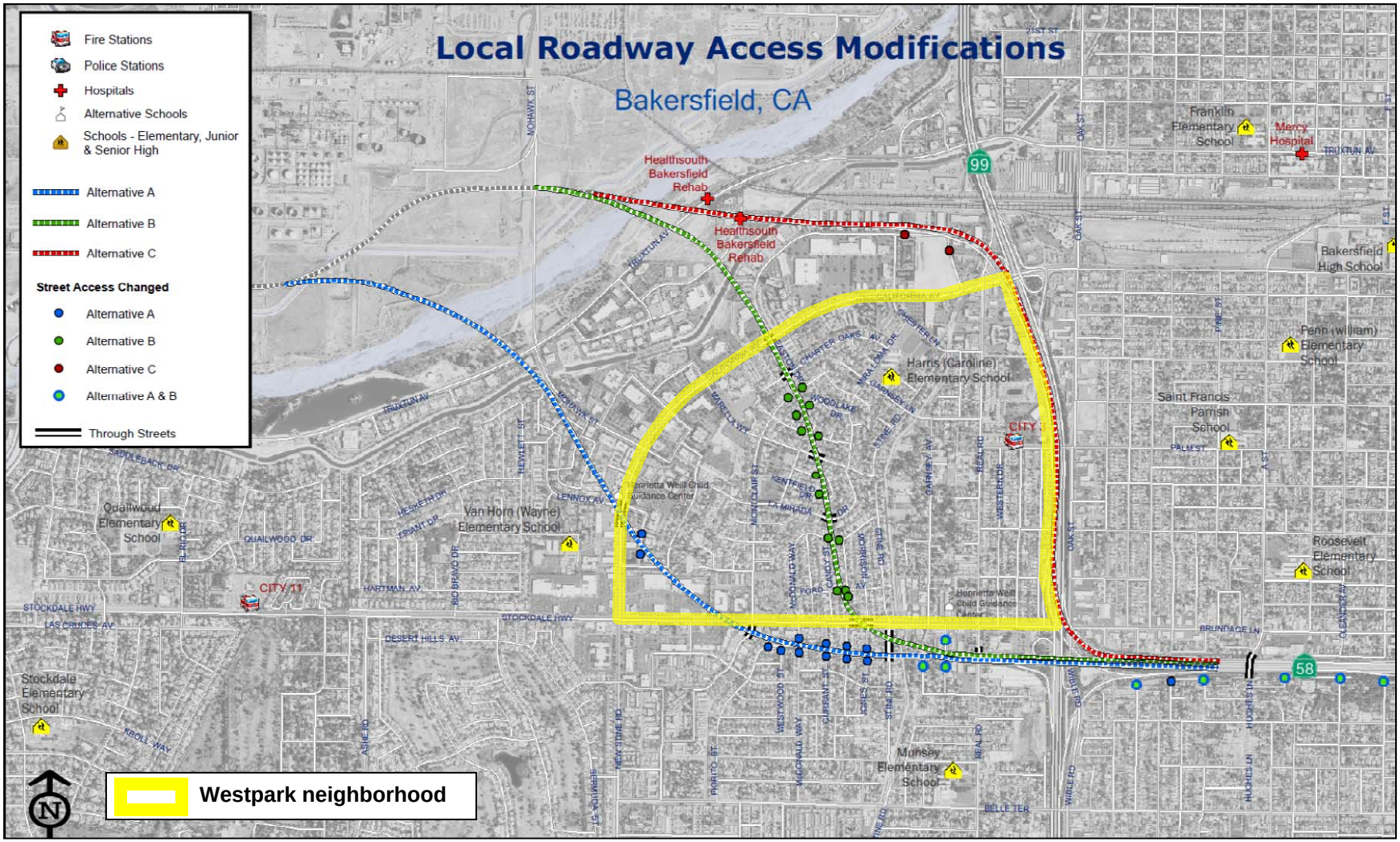


Figure 1. Local Roadway Access Modifications

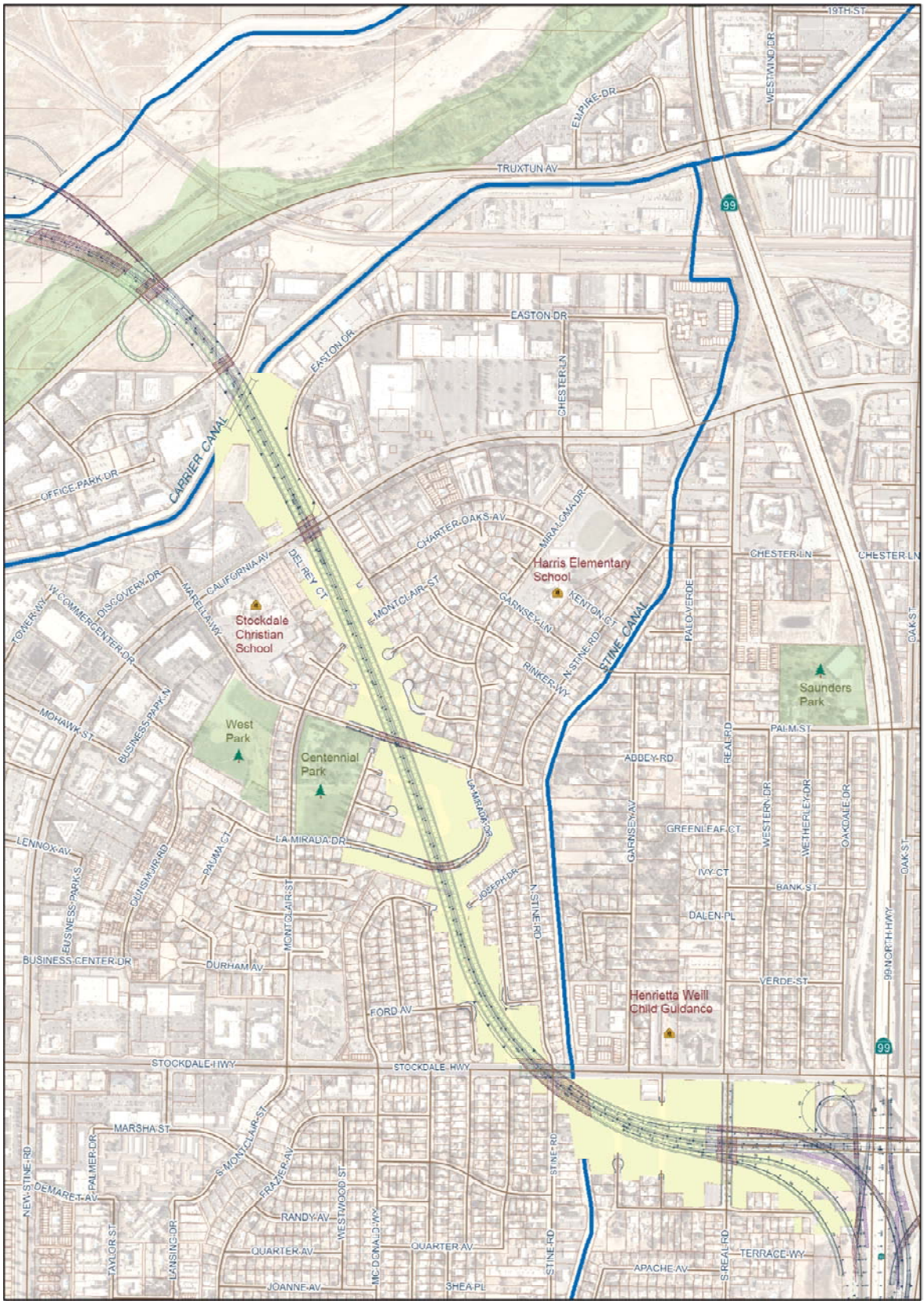


Figure 2. Centennial Alternative B Alignment

The vertical and horizontal alignment of Alternative B will affect a number of local and collector streets which serve the west of Stine Canal sub-neighborhood. Ford Avenue, just to the north of Stockdale Highway will be severed along with Joseph Drive; La Mirada Drive and Marella Way will be reconstructed to bridge over the Centennial freeway. These four named streets are all classified as *local* streets. Local streets provide access to abutting properties and are not intended to carry through, or non-local traffic. Montclair Street, the only *collector* street impacted by Alternative B, will be severed to the north of Marella Way. Collector streets are intended to collect traffic from local streets and carry this traffic to and from arterial streets.

CHANGES TO LOCAL CIRCULATION

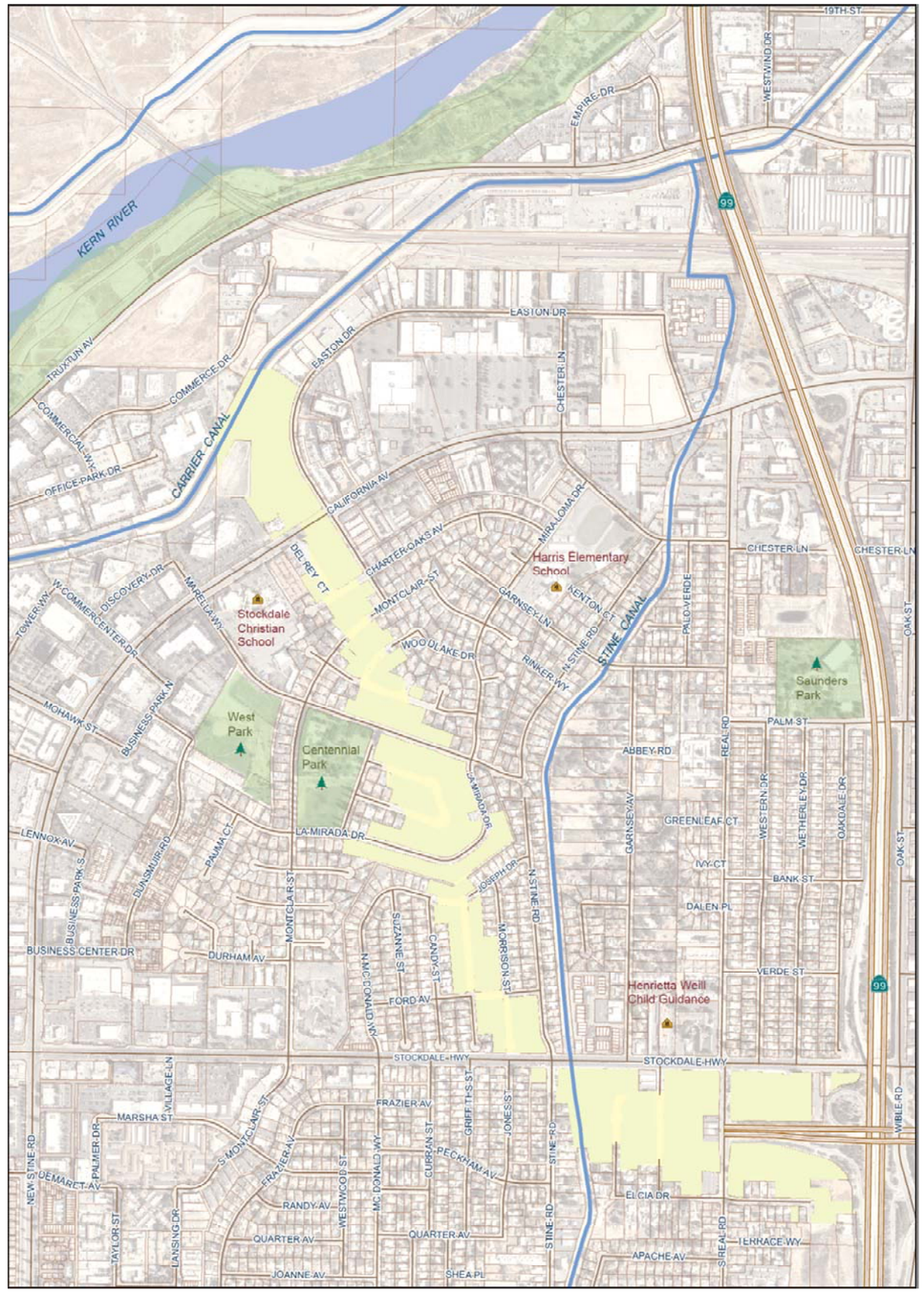
To more fully identify local circulation impacts resulting from the Alternative B freeway alignment, Figure 3 illustrates side by side maps of the Westpark neighborhood street network before and after the insertion of the freeway. (Larger scale graphics are provided at the end of this report supplement to allow for additional comparison.) The freeway is not illustrated on the "after" portion of the graphic to allow for easier comparison of local circulation patterns.

In the area between California Avenue and Stockdale Highway, the following streets will be severed east and west of the proposed right-of-way:

1. Charter Oaks Avenue
2. Montclair Street
3. Woodlake Drive
4. Kensington Avenue
5. Fallbrook Street
6. Hillsborough Drive
7. Kentfield Drive
8. Joseph Drive
9. Ford Avenue

Insofar as altered circulation patterns,

1. **Charter Oaks Avenue** residents living on the east of the alignment will use Easton Drive and Mira Loma Drive for access, while residents living on the west side of the alignment will use Del Rey Court to access California Avenue.
2. **Montclair Street** residents living on the east side of the alignment will use Mira Loma Drive, while residents living on the west side of the alignment will use Marella Way.
3. **Woodlake Drive** residents living on the east side of the alignment will use Mira Loma Drive, while residents living on the west side of the alignment will use Marella Way.
4. **Kensington Avenue** residents living on the east side of the alignment will use Mira Loma Drive, while residents living on the west side of the alignment will use Marella Way.
5. There will be no **Fallbrook Street** residents living on the east side of the alignment following construction of the freeway on the Alternative B alignment. Residents living on the west side of the alignment will use La Mirada Drive.



BEFORE **AFTER**

Figure 3. Comparison of the Westpark Neighborhood with and without the Centennial Freeway (Alternative B)

6. There will be no **Hillsborough Drive** residents living on the east side of the alignment following construction of the freeway on the Alternative B alignment. Residents living on the west side of the alignment will use La Mirada Drive.
7. There will be no **Kentfield Drive** residents living on the east side of the alignment following construction of the freeway on the Alternative B alignment. Residents living on the west side of the alignment will use La Mirada Drive.
8. **Joseph Drive** residents living on the east side of the alignment will use North Stine Road, while residents living on the west side of the alignment will use McDonald Way.
9. **Ford Avenue** residents living on the east side of the alignment will use North Stine Road, while residents living on the west side of the alignment will use McDonald Way.

To more specifically identify local traffic impacts to the Westpark neighborhood, Parsons traffic engineers and transportation planners visited the neighborhood on numerous occasions to observe conditions in the field. Specifically, Parsons staff:

- Determined which streets would remain open for traffic to be diverted to after the project was built
- Measured and observed the widths of the streets to determine if they were adequate for two vehicles to safely pass one another, particularly if cars were parked on them
- Determined the number of lanes on the streets
- Determined the locations of crosswalks, stop controlled intersections and signal-controlled intersections
- Determined which streets had and did not have sidewalks
- Looked for children playing in the streets to determine how safety would be impacted
- Looked for bicycle and pedestrian activity, especially around schools and parks
- Determined if there were turn restrictions on any streets
- Looked for any unusual conditions in the field that might affect traffic flow, i.e., right turn only, cul-de-sac, local commercial development circulation, one-way streets.

In addition to the observations noted above, Parsons staff used the following methodology to quantify traffic impacts.

- Counted the number of houses affected
- Determined, for each street, the number of houses deleted from the traffic mix by virtue of the new freeway
- Identified, for each street, before and after access routes to the houses on the street—north, south, east, and west, as appropriate.
- Assigned an assumed proportion to the directions based on the location of the neighborhood relative to the metropolitan area
- Determined which directions were affected
- Determined the number of daily vehicle trips affected based on Institute for Transportation Engineers published trip generation rates

- Determined new routes for the residual trips
- Assigned trips to the impacted routes based on the new route and the proportion of trips (east, west, north, south) using the route. Trips on some roads decreased.
- Determined if houses in adjacent neighborhoods 0.5 to 0.75 mile away would be likely to use any of the streets closed by the freeway.

Based on the above field investigation and quantification of potential traffic volumes, this assessment of local circulation impacts finds the following.

1. This study concludes that the proposed project has utilized design features that will maintain reasonable circulation patterns within the Westpark neighborhood. By virtue of the original subdivision design, including many cul-de-sacs and winding streets, most of the neighborhood traffic activity is limited to a small number of local and collector streets; specifically, Easton Drive, La Mirada Drive, Mira Loma Drive, Montclair Street, and Marella Way. These streets are all completely or largely retained; and as a result, the basic traffic pattern will be maintained after the project is built.

2. Analysis of the study area has determined that there are approximately 7,325 total vehicle trips per day which occur on local streets and collectors in the study area before construction of the proposed project. According to current plans, 193 residential and commercial properties will be removed within the study area. Removal of these properties will result in a reduction of approximately 2,810 trips per day, or about 40 percent of the current traffic in the area. Table 1 provides details of this analysis. In addition to tabulating the volume of traffic reductions, likely shifts in traffic routes are noted in the table. A general conclusion from this investigation is that the reduction of overall traffic levels will more than offset shifts in traffic to alternate access routes.

3. Access through Stockdale Christian School Property for Charter Oaks Avenue residents at the western end will be affected following construction of the Centennial freeway on the Alternative B alignment. Parcel maps show a cul-de-sac at this location and street signs indicate that this is not a through street. However, this street has been opened for access to the Stockdale Christian School, the row of apartments to the east of the school, and California Avenue. This situation will need additional consideration before constructing an additional access from Del Rey Court to California Avenue.

Looking West toward Stockdale Christian School

Looking North with Stockdale Christian School on the Left and Apartments on the Right

Figure 4. Western End of Charter Oaks Drive

Table 1. Analysis of Traffic Circulation in the Westpark Neighborhood

GROUP NO.	IMPACTED LOCAL STREET NAMES	NO. OF PROPERTIES REMOVED	NO. OF PROPERTIES AFFECTED	NO. OF TRAFFIC LANES EACH DIRECTION	TRAFFIC PATTERN		DESCRIPTION/ LOCATION OF BOUNDARIES/ RESTRICTIVE FEATURES	VEHICLE TRIP GENERATION TO COLLECTORS/ ARTERIALS BEFORE PROJECT	VEHICLE TRIP GENERATION TO COLLECTORS/ ARTERIALS AFTER PROJECT	DIFFERENCE IN NUMBER OF VEHICLE TRIP
					BEST ACCESS ROUTE BEFORE PROJECT	BEST ACCESS ROUTE AFTER PROJECT				
A1	Garnsey Avenue	9	9	1	Elcia to Williamson/S Real	Elcia to S Real	To Real Rd through Elcia Dr	872	270	–602
A2	Williamson Way	13	4	1	Williamson	Elcia to S Real				
A3	Elcia Drive	1	14	1	Williamson/S Real	S Real				
B1	Suzane Street	0	10	1	Ford to McDonald/N Stine	Ford to McDonald	To Stockdale Hwy through McDonald Way	1,578	1,248	–330
B2	Candy Street	0	11	1						
B3	Dunlap Street	3	9	1						
B4	Morrison Street	13	0	—						
B5	McDonald Way	0	36	1						
B6	Suzane Street	0	25	1						
B7	Candy Street	2	21	1						
B8	Dunlap Street (W)	11	0	1						
B9	Joseph Drive (W)	4	4	1						
C1	Dunlap St (E)	11	1	1	Ford/Joseph to McDonald/N Stine	Ford/Joseph to N Stine	To Stockdale Hwy through N Stine Rd	1,090	850	–240
C2	Morrison St	6	21	1						
C3	Joseph Dr (E)	1	10	1						
C4	N Stine Rd	6	53	1	N Stine	N Stine				
D1	La Mirarda Dr	27	24	1	Fallbrook/Montclair to Marella	Montclair to Marella	To Marella Way/La Mirada Dr/Montclair St	1,244	554	–690
D2	Kentfield Dr	9	8	1	N: Fallbrook to Marella	N: Fallbrook-La Mirada to Marella				
D3	Hillsborough Dr	17	2	1	N: Fallbrook to Marella	N: Fallbrook-La Mirada to Marella				
D4	Marella Way	16	8	1	Marella	Marella				
E1	Montclair St (S)	4	16	1	N: Montclair to Easton/Mira Loma	N: Montclair-Marella to California/Mira Loma	To Marella Way through Montclair St	250	180	–70
E2	Kensington Ave (W)	3	2	1						
F1	Montclair St (N)	4	25	1	S: Montclair	S: Mira Loma-Montclair	To Mira Loma Dr/Montclair St	820	650	–170
F2	Kensington Ave (E)	5	6	1	N: Mira Loma	N: Mira Loma				
F3	Malibu Ct	2	4	1	N: Kensington-Montclair to Easton/Mira Loma	N: Kensington-Montclair-Marella to California/Mira Loma				
F4	Redondo Ct	0	6	1	N: Kensington to Mira Loma	N: Kensington to Mira Loma				
F5	Woodlake Dr	6	16	1	S: Kensington to Montclair	S: Mira Loma–Marella to Monclair				
F6	Mira Loma Dr	0	8	1	Mira Loma	Mira Loma				
G1	Charter Oaks Ave(W)	5	5	1	Easton	Del Rey	To California Ave through Del Rey Ct	220	100	–120
G2	Del Rey Ct	7	5	1						
H	Easton Dr	8	5	1	S: Montclair	S: California	To California Ave through Easton Dr	640	50	–590
I1	Charter Oaks Ave (E)	0	41	1	S: Easton to Montclair	S: Easton to California/Mira Loma-Marella to Montclair	To Easton Dr/Mira Loma Dr	610	610	0
I2	Mira Loma Ct	0	6	1	S: Mira Loma to Montclair	S: Mira Loma-Marella to Montclair				
I3	Garnsey Ln	0	14	1						
							TOTAL	**7,324**	**4,512**	**–2,812**

4. Regarding bicycle and pedestrian access within the study area, Parsons staff found that there was recurring pedestrian and bicycle activity by students arriving and departing the Harris Elementary School. However, the vast majority of trips to the elementary schools are made in motorized vehicles. Since the school is located along local streets which are unaffected by freeway construction, reasonable access is assured.

   Along La Mirada Drive and local roads to the north, residents will be able to easily cross the freeway along La Mirada Way and Marella Way which will maintain adequate width for bicycles and sidewalks. However, residents living along Joseph Drive and the local roads to the south will be required to exit their neighborhood and walk or bike along Stockdale Highway to visit their neighbors on the east or west side of the freeway.

5. There are two significant schools located within the study area: (1) Harris Elementary School at the corner of Mira Loma Drive and Garnsey Lane, and (2) Stockdale Christian School located at the corner of Marella Way and California Avenue. Stockdale Christian School is a private school which draws students from a wide region of the metropolitan Bakersfield area. Harris Elementary School is a neighborhood public school serving elementary students who live within the study area. The Westpark neighborhood is entirely within the Harris Elementary School boundary.

   Access to both schools by walking, bicycling and motorized vehicle will be unaffected (in terms of travel distance) for the vast majority of Westpark residents by the proposed alignment of Alternative B. A small number of students will be required to travel two or three blocks of extra distance to access the schools.

6. There are two significant parks in the study area west of the Stine Canal. Westpark is located on the south side of Marella Way, 150 feet west of the intersection with Montclair Street. Centennial Park is located on the southeast corner of Marella Way and Montclair Street. A row of single family residences that fronts on Montclair Street separate the two parks. Because of their location, these parks are designed to primarily serve the residents of the neighborhood. However, residents come from all over Bakersfield to use these park facilities, especially the fenced off dog park and tennis courts. Observation indicates that park users arrive by automobile, on foot and bicycle throughout the day. A number of groups arrive in private vehicles and in vans to use the picnic area under the shady oak trees. A small number of park users were observed arriving on bicycles.

   Access to both parks by walking, bicycling and motorized vehicle will be virtually unaffected (in terms of travel distance) for the vast majority of Westpark residents by the proposed alignment of Alternative B. A small number of residents will be required to travel two or three blocks of extra distance to access schools.

CONCLUSION

Implementation of Centennial Corridor Build Alternative B will have very little, if any, impact on Westpark neighborhood traffic, pedestrian, or bicycle circulation.

Westpark Neighborhood Map

Westpark Neighborhood Map with Centennial Freeway (Alternative B) Right-of-Way